Volume 89 Number 24

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

BRUTE of a thing that a blast furnace appears to be, actually it is a delicate mechanism physically and economically. Workmen may be laid off, mills shut down, sales effort curtailed, and an immediate, continuous saving is effected. But when a stack is taken off linings begin to deteriorate and it may cost up to $25,000 to restore one of the 1000-ton type to service. One indication of the final stages of a depression is an increase in the number of stacks banked—in the depression of 1893 one Ohio stack was banked for 18 months— or carried along on part-time schedule. Pig iron production statistics for November (Page 21) indicate strongly that such a situation now prevails.

Pig Iron Vitiated as Business Indicator

Not in months have so many stacks been operated on reduced wind, or banked one week and blown the next, or have the wind taken off over the week-end. Hence the number of stacks reported active is not as trustworthy an index of production as in lush times, and the demise of one more indicator of industrial activity may be charged up to the depression. . . . Statistics for November show 67 stacks active as of Nov. 30, two fewer than at the bottom of the 1921 depression (page 21). November daily output of iron was 36,727 gross tons, 2.9 per cent below October. . . . November's operating rate of 25.5 per cent for iron parallels the 26 per cent rate for steel this week (page 64), which is a new low for the depression.

Output Recedes Faster than Sentiment

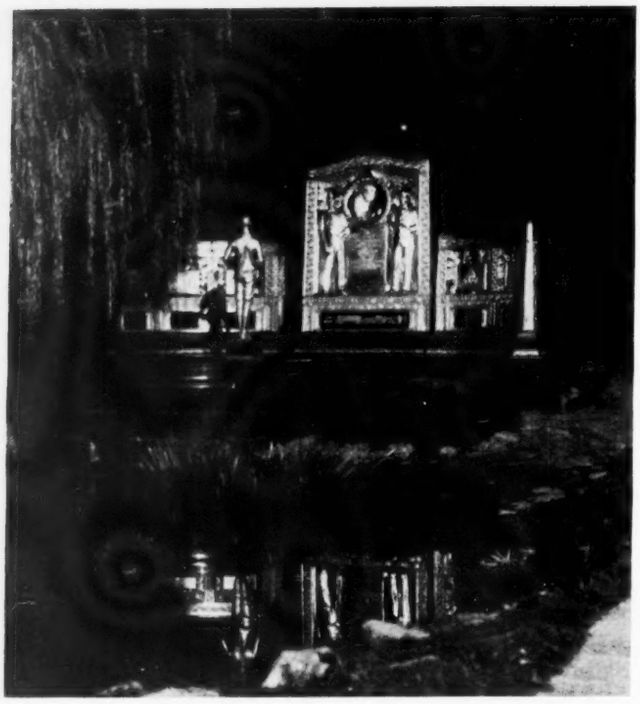
Even though steelmaking is surrendering the gains of early November, the tone of the markets remains moderately buoyant. . . . By easy stages automotive steel requirements are developing, with Ford expected almost daily to place an encouraging tonnage. Regardless of the retail markets, a minimum number of new models must be assembled for shows and for dealers, and at Detroit (page 24) unusual interest is manifest in model changes. . . . Over 60,000 tons of steel pipe is active or near inquiry (page 67), excluding a nearby Socony-Vacuum program. . . . Over 18,000 tons of structural shapes passed from the inquiry to the order stage in the past week (page 62), with 25,000 tons coming up at New York in a fortnight.

No Material Solace in Tonnage Alone

Tonnage, still more tonnage, is the prayer of the steelmaker, yet it is easy to recall what a comfortable production year 1928 was, and even then profits were not commensurate with volume (page 26). What steel needs today is

Acme Photo

A steel house for $2500! Garage, laundry, living room, dining room, kitchenette, three bedrooms, bath and large playroom are included in this structure, built recently in Syosset, L.I.



The memorial to George Westinghouse in Schenley Park, Pittsburgh, now is floodlighted on occasion at nights, with 1600 candlepower from concealed units—a beautiful statue in a landscaped setting, enhanced by the reflecting pool

both remunerative prices and an adjustment of capitalization. . . . But this happy situation can flow only from a more placid business outlook than is promised with a turbulent congress convening. Not in peacetime has any President submitted to congress so weighty a message as President Hoover is scheduled to Tuesday (page 17). A good deal of concern is expressed over recurring suggestions that national wealth must be more equitably distributed as one means of attaining economic stabilization.

Engineers Would Dig In on Economic Front

In a more penetrating, dignified, altruistic manner than would be expected of congress, the American Society of Mechanical Engineers at its annual meeting in New York last week considered economies and stabilization of business (page 36). What the country needs is not the good 5-cent cigar so typical of the congressional attitude but militant engineers to take the offensive against economic disturbances, was one conclusion. When the machine age was put on the defensive its protagonists rose to declare that technological progress is inevitable and any ill effects only a temporary maladjustment.

Rustless Steels Capturing New Markets

Corrosion-resistant steels enlarge their reputation for ubiquity. . . . At the Mechanical Engineers' convention two conditions were set up (page 36) for increased use of the 18-8 steels in conveyor systems: Clarification of the patent and licensing situation, lower cost of production. . . . Last week (STEEL, Nov. 30, pages 15, 19) the "Pioneer," first American all-steel plane, largely of corrosion-resistant material, took to the air; this week (page 17) is presented the first Russian plane of the same material, christened "Steel 2", seating six persons. . . . For his new model Ford has ordered 20,000 headlight shells of No. 26 gage corrosion-resistant steel (page 24), wider but shallower than the present style.

Japan Welds Water Pipe in Sections

In Japan as in the United States, much technical thinking has been devoted to welding steel pipe. Striving to use domestic material, yet confronted with limitations of their plate mills, Japanese engineers have developed a unique process for fabricating water pipe (page 31). Depending upon size, two half or four quarter sections are welded by the automatic shielded arc process. Field joints require inside welding. . . . Standardization of machining finishes, made highly desirable by decentralization of the industry, awaits only approval of an investigating committee. With agreement on grade of finishes and methods for measuring them, blueprints will be marked (page 50) to designate exact finishes on completed work.

Faster Mills Demand New Shears

Rapid development of wide hot strip mills, continuous plate mills and the manufacture of electric welded pipe has created a need for a rotary side trimming shear, similar to but lighter and speedier than those used in plate mills. Such a unit (page 34) has been built, its capacity ranging from the thinnest gage up to ½-inch, and in width from 18 to 60 inches. . . . Scrap from such shears might form up to 65 per cent of the charge for tilting open-hearth furnaces, one steelmaker finding (page 45) a charge of 35 per cent of hot metal to be best, with 42 per cent the maximum. . . . A basic open-hearth furnace at St. Louis (page 41) has made 1730 heats, averaging 27.3 gallons of oil per ton of steel.

No Joy in Foreign Markets, Either

Foreign steelmakers appear more despondent than domestic ones. . . . October was the poorest month in years for the German industry (page 86), with domestic demand only 35 per cent of the total, the reverse of normal. . . . France reports better export demand but lower domestic business and is worried (page 86).

Taxes, Social Relief, Measure Congress' Effect on Business

WASHINGTON — Barring some unforeseen hindrance arising from the confused political situation on Capitol Hill, President Hoover will submit to congress Tuesday what probably will be the most important peacetime message of any President.

Taxes, antitrust laws, social relief, economic stabilization, war debts, the railroads, the tariff, immigration, government appropriations—these are some of the more pressing problems to be considered at the final session of congress prior to the presidential election of 1932.

Presumably the Republicans will organize the senate and the Democrats the house of representatives—a tortuous road for any bill—and at the end of the road stands a Republican president, veto in hand. In both houses the progressive insurgents hold the balance of power.

For industry, the mixed situation at Washington cannot be other than disturbing, especially early next year when it is hoped that some improvement will develop. A political truce for the benefit of business is a mirage.

Steel Sales Tax Possible?

For steel, probably the most important issue to arise during the coming session is taxes. An increase in federal taxes to help balance the budget is a foregone conclusion. Increased income tax rates are generally expected. Whether a sales tax would reach steel directly depends upon the nature of the proposal. Nothing direct has been said concerning corporation taxes. Undoubtedly the President's message, presumably relaying the views of Secretary Mellon, will clarify the tax matter Tuesday.

Amid all other issues it does not appear likely that any noteworthy amendment of the Sherman or Clayton antitrust laws can survive. There is 41 years of tradition behind the Sherman act, 16 behind the Clayton act. There is no unanimity of opinion concerning the proposal to permit the federal trade commission to give advance opinions on business and trade association programs—a proposal long bruited about Washington.

Even some so-called radical members of congress are ready to assent to some modification of these laws to permit joint action which would permit co-operation in such sick industries as coal, and considerable merit is accorded the Swope plan, but in general the chances do not appear favorable to harmonizing all viewpoints, and under the circumstances inertia and tradition have the best chances.

Like other industries, steel will have a very direct and important interest in social legislation. The La-Follette group will at least have the opportunity to air its advanced ideas on unemployment insurance, and there will be considerable discussion of a redistribution of wealth. Opening up of the income tax law may develop a punitive as well as revenue aspect concerning wealth.

□ □ □

Whatever railroad legislation is projected will probably be developed by the President's message, and the presumption is that it will take the nature of financial relief to stricken carriers with the goal of restoring the investment status of railroad securities.

The differences between the interstate commerce commission and the railroads over distribution of revenue to be raised by the forthcoming advance in freight rates are not insuperable. At the hearing Nov. 28 the railroads informed the commission that any effort to distribute this revenue other than in the form of loans would precipitate legal action by railroad stockholders and completely nullify the relief intended. An early decision, to permit filing of new tariffs, is expected.

Some railroads are not waiting until Dec. 8, when 1500 local chairmen of railroad unions convene at Chicago, to press an adjustment of wages. The Chicago & North Western has asked its union employes to accept a 15 per cent reduction. In June all employes earning over $200 a month took a 10 per cent cut, and Oct. 1 those earning over $300 took another 10 per cent reduction.

Cut Regarded as Inevitable

In case the Dec. 8 meeting at Chicago is not productive, the railroads intend filing action immediately under the provisions of the railroad labor act of 1926, but the ensuing mediation would consume almost a year. The unions are expected to offer a counter proposal, to accede to a reduction under certain conditions. In event of railroad labor asking a reduction voluntarily, the current rates would be automatically restored eventually. In 1929 the railroads paid out $2,941,000,000 in wages; in 1931 there will be a reduction of 27 per cent to $2,145,000,000.

The Burlington railroad has cut nonunion employes receiving $300 a month and more, 10 to 20 per cent effective Jan. 1.

□ □ □

Charles F. Abbott, executive director, American Institute of Steel Construction, appeared before the senate committee on manufactures Dec. 1 to advocate broadening of the antitrust laws. The steel construction industry is suffering from re-

International News Photo

AN ALL-STEEL, ALL-SOVIET AIRPLANE: In its issue of Nov. 30, pages 15 and 19, STEEL illustrated and described some features of the first all-steel airplane built in the United States. The launching of the four-passenger amphibian PIONEER, built of corrosion-resistant steel, barely preceded announcement by the soviet government that it has constructed "STEEL 2," a six-passenger plane built of what it calls rustless steel

lentless, uneconomic competition as well as the effects of the general business depression, he declared. In suggesting that the way to industrial co-operation be smoothed over he summarized the rationalization plan proposed at the recent convention of the institute (STEEL Nov. 2, page 23).

□ □ □

Three million residences in 5 years is the potentiality of the President's proposal to make available for home owning and building the same credit terms now offered by the automobile industry. Like the National Credit Corp. to thaw out frozen bank loans, credit is the essence of this plan.

Directly, if each of the 3,000,000 homes consumed a half ton of steel in the form of cellar posts, first floor beams, pipe, nails and other products, the benefit to the steel industry in 5 years would be about 1,500,000 tons, or about a two-week run of the mills at their current low rate. This is exclusive, of course, of the indirect uses in the demand for excavating machinery, equipment for preparing building materials, and the like.

□ □ □

Senator Smoot, influential Republican member of the upper houses, forecasts that there will be no tariff legislation. This would indicate displeasure on the measures to embargo Russian manganese to be presented in the senate by Senator Oddie and in the house by Representative Williamson.

The President Dec. 2 approved the tariff commission's recommendation that the present duty on steel pens, cement and gage glass tubes be not changed.

Toledo Machine & Tool Co., Toledo, O., has filed an application with the tariff commission asking for an increased duty on power driven machines for punching, shearing, blanking, forming, and assembling metal, and fixtures, tools, attachments, and parts thereof.

□ □ □

William Green, president, American Federation of Labor, proposed a 5-day, 35-hour working week before the senate subcommittee on manufactures. He declared that there is work enough now for every employable person on the basis of 7 hours a day, 5 days a week.

Mr. Green again declared the federation's opposition to unemployment insurance as a permanent solution, declaring that a supply of work was more vital. He reiterated that if industry does not equalize the distribution of national income in wages, the government will do so in taxation.

□ □ □

Immigration in October totaled only 3913 persons, 72 per cent below October, 1930.

Wide World Photo

MORE STEEL PER CAR IN AUTOMOBILES EQUIPPED WITH PORTABLE CHAIR: Also, there may be a suggestion in this for the makers of corrosion resisting steel, as the chair is beautifully and substantially constructed, using a considerable amount of metal. The chair, for invalids, is pushed into the car by means of a ramp which is housed under the floor of the car when not in use. It fits into the rear of the car as if it were part of the ordinary cushion

Kalamein Products Makers Organize To Stabilize

New York—Harry H. Gross, Leonard Sheet Metal Works Inc., Hoboken, N. J., is president of the newly-organized Associated Kalamein Products Manufacturers Inc., formed to stabilize conditions in that industry, which includes manufacture of metal door frames. Kalamein is a metal-covered wood material used increasingly in the manufacture of doors.

Other officers are: George H. Norman, Norman-Seton Inc., first vice president; Alfred Held, Reliance Bronze & Steel Corp., second vice president; Henry Kahr, Aetna Steel Products Corp., treasurer, and Charles Landow, Landow Metal Products Co., secretary.

The following firms are members in addition to those above mentioned: Diamond Steel Products Co., Rapid Fire Proof Door Co., Globe Metal Products Co., Service Kalamein Co., Superior Fire Proof Door and Sash Co., World Fire Proof Door Co. and Triangle Fire Proof Door & Sash Co.

Forecast 1932 Will See Revival, if Courage Holds

REGARDLESS of what the conditions are in the other nations of the world we believe that 1932 *will be a year of revival in the United States. If it is not it will be our own fault and chiefly due to our own lack of confidence, courage and co-operation.*

So declare Alvan T. Simonds and John G. Thompson, of the Simonds Saw & Steel Co., Fitchburg, Mass., in their economic publication and forecast, Looking Ahead. Concerning the closing months of 1931 *and writing before the returns are in for November, they say:*

Based on past experience, December will be lower than November, and November will be lower than October, unless October proves to be the lowest month of the depression in which case November will be higher than October —and December probably a little lower than November, but higher than October.

If the index for October is lower than that for September and the November index is lower than that for October, then the low for the depression will come in December.

What's Happening In Business World

MANUFACTURERS of both Remington and Underwood typewriters are preparing to increase their facilities in Canada in order to obtain British preference under the new emergency tariff, which requires at least 25 per cent British labor and material must be used. Shipment of parts from the United States to Canada will be curtailed proportionately.

□ □ □

Use of lighter paints in priming steel is one device of the navy to

build as large and effective 10,000-ton cruisers as naval disarmament treaties permit. Substitution of aluminum paint for red lead is said to lighten a 10,000-ton cruiser 100 tons.

□ □ □

A price of $12,000 was put on each common share of the Corrigan, McKinney Steel Co., Cleveland, in settling an estate. When organized in the '80's, the company was capitalized at $250,000, which never has been changed.

□ □ □

A 25-year old blast furnace slag pile at Bessemer, Ala., bought from Tennessee Coal, Iron & Railroad Co. by Berman Bros., Birmingham, is yielding considerable ferromanganese and scrap, the former commanding $79 a ton and the latter $15. A sand and gravel company is taking the slag.

Report on Steel Rail Price Investigation Is Near

Washington — Attorney General Mitchell states that the steel rail price investigation being conducted by his department is nearing completion and he expectes a report soon. He did not indicate what his operatives had found.

The investigation, designed primarily to ascertain why standard steel rails have remained pegged at $43 a ton, was instigated by an inquiry from Senator Couzens, of Michigan, to the interstate commerce commission and thence to the department of justice.

Higher Class Rates Create Inequalities; Some Suspended

NEW YORK—New class rates on less-carloads of iron and steel products took effect Dec. 3, increasing the rate from Pittsburgh to New York from 39½ to 52 cents, from Pittsburgh to Philadelphia from 37½ cents to 47 cents, and from Pittsburgh to Boston from 42½ to 63 cents.

Less-carload rates to New York, Philadelphia and Boston from steel producing centers east of Pittsburgh are not affected since they are on a commodity basis. Pittsburgh producers are endeavoring to change this situation to restore the balance.

Mills May Absorb Charge

The Pittsburgh mills, adversely affected by the new rates, may decide to absorb the added freight charge. There has been some speculation whether eastern mills might advance their delivered prices to equalize with their Pittsburgh competitors.

Some class rates which were to have been effective Dec. 3 have been postponed by the interstate commerce commission for 7 months or until July 3, 1932. These include class and commodity rates by way of Lake Michigan and Lake Superior ports on rail-lake and rail-lake-rail traffic both eastbound and westbound between eastern and western points. Rates on iron and steel pipe and fittings between points in western trunk line territory also have been suspended.

The increases in class rates are expected to expand railroad revenues about $25,000,000 a year in the East and $12,000,000 in the west. On top of the new class rates will be superimposed the increases granted by the commission in the recent 15 per cent case, to be effective so soon as a decision on distribution of the revenue is reached.

Closes Milwaukee Mill

Chicago—Inland Steel Co. has closed its sheet mill at Milwaukee, having an annual capacity of 100,000 to 120,000 tons. It will not dismantle the mill, purchased some years ago from the Milwaukee Rolling Mill Co., but probably will not again operate it. Milwaukee civic interests continue their efforts to find an operator for the mill.

Studies Steel Residences

A. O. Smith Corp., Milwaukee, is experimenting on the building of welded steel homes, expected to offer advantages in costs and construction over other methods. The corporation also has developed a new steel railroad grade crossing.

ONE of the features of the recent national dairy exhibition in Atlantic City, N. J., was a milk-tank car, with tanks of Allegheny metal, a noncorroding, chromium-nickel steel. The car contains two seamless tanks of welded metal plate, polished on the inside. Each tank, with a capacity for 4000 gallons is insulated with 3-inch corkboard or thermo insulation, then enclosed in 3/32-inch tank steel, with all seams welded. A two-speed agitator motor drive is provided for each tank. Tanks were made by the Alloy Products Corp., Milwaukee; car built by the Pressed Steel Car Co., McKees Rocks, Pa., and exhibited by the North American Car Corp., Chicago. The first car equipped with tanks of Allegheny metal has been in use about a year

Business Is Better

COLORADO FUEL & IRON CO. is re-employing men at its Pueblo, Colo., plant preparatory to reopening its rail mill next month.

□ □ □

Foundry of the National Erie Co., Erie, Pa., has resumed.

□ □ □

New building projects announced for Buffalo proper in the four months ended Dec. 1 totaled $11,000,000; in the same months of 1930, $4,000,000.

□ □ □

Canton Tin Plate Corp., Canton, O., is operating practically at capacity, has averaged 92 per cent operations the past year.

□ □ □

John Deere Tractor Co., Waterloo, Iowa, is returning to work 1000 of its employes Dec. 7, on a two-day weekly basis. The Deere plants at East Moline, Ill., have resumed on a

schedule slightly heavier than the Waterloo tractor plant.

□ □ □

Allis-Chalmers Mfg. Co., Milwaukee, has received a $1,000,000 order for transformers and switch gear from the Pennsylvania railroad.

□ □ □

A substantial increase in orders for automobile frames is reported by A. O. Smith Corp., Milwaukee, increasing its production schedule.

□ □ □

Eight thousand men have been returned to work as a result of the Canadian Pacific railroad reopening its main shops.

□ □ □

Greenwood, Ind., plant of the Noblitt-Sparks Industries is expected to be on full-time schedule by Jan. 1.

□ □ □

Globe-Wernicke Co., Cincinnati, is resuming on full schedule, with a good order book for four to five months.

□ □ □

Foote Bros. Gear & Machine Co., Chicago, gears and speed reducing equipment, reports an increase in the number of inquiries received for machine tool work.

□ □ □

White Co., Cleveland, will put 3000 men on full time instead of part time as a result of booking an order for 774 trucks for New York city.

□ □ □

Pusey & Jones Corp., Wilmington, Del., has recalled 100 furloughed employes, will recall 150 more by Jan. 1, to work on two new contracts.

□ □ □

Net earnings of the Perfect Circle Co., Hagerstown, Ind., maker of piston rings, for 10 months of 1931 were $4.94 a common share, against $3.51 in 1929, the previous peak. October earnings were 59 per cent greater than last October.

Exports of Flat-Rolled Steel Showing Gain

Exports of flat-rolled steel products, including sheets, strip, hoops, bands and tin plate, from the United States in 1930 accounted for one-fourth of all iron and steel exports, and in the first nine months of 1931 slightly exceeded that proportion, states J. Joseph W. Palmer, iron and steel division, deparment of commerce, Washington.

In the calendar year 1930 these exports of flat-rolled steel totaled 498,190 gross tons; in nine months of 1931 they were 208,374 tons. For both periods the greatest market was North and Central America, with the Far East second, and South America third.

Domestic Manganese Ore Consumption Up Slightly

Domestic manganese ore used in the manufacture of ferromanganaese in 1930, 32,969 gross tons, represented 6.7 per cent of the total consumed, compared with 4.3 per cent in 1929, according to the bureau of mines, Washington.

Foreign sources supplied 459,478 tons of manganaese ore, as follows: Russia, 211,436 tons; Brazil 138,757 tons; Africa, 62,913 tons; India, 44,667 tons; and Chile, 1705 tons. Foreign ferruginous manganese ore consumed amounted to 40,501 tons.

Production of ferromanganese was 274,830 tons, containing about 216,000 tons of the metal manganese, an average of 78.5 per cent. The output of spiegeleisen was 87,059 tons, containing 17,412 tons of the metal manganese, an average of 20 per cent.

Shipments of ferroalloys of all classes last year were 650,240 tons, valued at $51,900,220, a decrease of 22 per cent in quantity, and 31 per cent in value, compared with 1929.

NINE HUSKY CRANES WALLOWING IN WORK ON $6,000,000 FREIGHT TERMINAL: Their chief job is digging with orange-peel buckets inside of sections of 8-foot caissons, so these may be sunk 75 to 100 feet to bed rock. And in this New York Central's project, covering three city blocks in New York, there will be 372 caissons. The same cranes, of ½ and ¾-yard capacity, manufactured by the Byers Machine Co., Ravenna, O., have other duties to perform in between time, such as carrying buckets of concrete from mixer to forms, and the unloading and handling of structural steel for the substructure

Financial News of Steel Industry

YOUNGSTOWN SHEET & TUBE CO., Youngstown, O., has declared regular quarterly dividend of $1.375 on the preferred, payable Jan. 1, 1932, to record Dec. 14.

□ □ □

National Steel Corp., Pittsburgh, has declared a regular quarterly dividend of 50 cents a common share, payable Dec. 10 to record Nov. 30.

□ □ □

Arthur G. McKee & Co., Cleveland, has declared the regular quarterly dividend of 87½ cents a share on the class B stock, payable Jan. 1, 1932 to record Dec. 20.

□ □ □

American Steel Foundries, Chicago, in the first nine months of the year had net loss of $155,707, against net profit of $2,720,369 in the same period of 1930. Third-quarter loss this year was $295,786 compared with profit of $580,831 in 1930.

Metal Industries To Help Broaden Safety Movement

Two representatives of the metal industries have been chosen to serve on a new special advisory committee of the National Safety council, to be headed by Samuel Insull Jr., Chicago. They are H. H. Robertson, president, H. H. Robertson Co., Pittsburgh, manufacturer of metal products, and Frank J. Lanahan, president, Fort Pitt Malleable Iron Co., Pittsburgh. Gerard Swope, president, General Electric Co., also is a member. The group is to co-operate with the council's executive committee in broadening the national safety movement.

Iron Output Continues Drop; Stacks Lowest in History

PIG iron production in the United States slipped to a still lower level in November and, although the daily rate was at a point 8832 tons higher than the all-time low in 1921, active blast furnaces dropped to 67, or two less than the record low of 10 years ago. For seven months of declining output, the November shrinkage in tonnage was smallest, although smaller than October by only 12 tons.

The average daily rate of coke pig iron made in November was 36,727 gross tons, which compared with the 37,831 tons of October, was a drop of 1104 tons, or 2.9 per cent. October had declined 1116 tons, or 2.8 per cent from September. As was the case with September and October, the November daily rate was the lowest since the 32,859 tons of September, 1921. The all-time low point was 27,892 tons in July, 1921. The daily rate of November, one year ago, was 62,182 tons.

AVERAGE DAILY PRODUCTION

	1931	1930	1929	1928
Jan.	55,337	91,573	110,742	92,113
Feb.	61,114	101,640	114,942	99,954
Mar.	65,448	104,930	119,662	103,199
Apr.	66,986	106,371	122,106	106,066
May	64,355	104,564	125,753	106,219
June	54,599	97,817	123,887	102,745
July	47,170	85,110	122,016	99,120
Aug.	41,264	81,455	120,845	101,193
Sept.	38,947	75,893	116,548	102,120
Oct.	37,831	69,851	115,747	108,824
Nov.	36,727	62,182	106,081	110,155
Dec.	.....	53,732	91,513	108,702
Ave.	51,745	86,141	115,808	103,365

NOVEMBER IRON PRODUCTION

	No. in blast last day of month Nov.	Oct.	Total tonnage made Merchant	Nonmerchant
Ohio	18	20	26,295	270,848
Pennsylvania	17	18	15,595*	249,562
Alabama	6	6	57,205	29,981
Illinois	6	6	50,959	67,460
New York	6	6	53,259	36,896
Colorado	0	0		
Indiana	5	5		
Maryland	3	2	81	157,176
Virginia	0	0		
Wisconsin	0	0		
Kentucky	1	1		
Massachusetts	0	0		
Tennessee	0	0	.....	55,230
Utah	1	1		
West Virginia	2	2		
Michigan	2	2		
Minnesota	0	0	14,617	6,131
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro—all states	....	....	†	10,525
Total	67	69	218,011	883,809

*Includes spiegeleisen and ferromanganese. †Included in Pennsylvania total.

MONTHLY PRODUCTION

	1931	1930	1929
Jan.	1,715,443	2,838,751	3,433,028
Feb.	1,711,192	2,845,937	3,218,376
Mar.	2,028,906	3,252,822	3,709,518
April	2,009,582	3,191,119	3,663,167
May	1,995,001	3,241,477	3,898,344
June	1,637,998	2,934,508	3,715,104
July	1,462,270	2,638,441	3,782,511
Aug.	1,279,205	2,525,105	3,746,198
Sept.	1,168,436	2,276,781	3,496,454
Oct.	1,172,781	2,165,374	3,588,146
Nov.	1,101,820	1,865,458	3,182,420
Dec.	.....	1,665,715	2,836,917
Total	17,282,634	31,441,488	42,270,183

RATE OF OPERATION
(Relation of Production to Capacity)

	1931[1]	1930[2]	1929[3]	1928[4]
January	38.4	65.0	79.0	66.8
February	42.5	72.1	82.2	72.5
March	45.4	74.5	85.5	74.8
April	46.5	75.4	87.4	76.8
May	44.7	74.2	89.8	77.0
June	37.9	69.3	88.5	74.4
July	32.7	60.3	87.2	71.8
August	28.7	57.8	86.4	73.3
September	27.0	53.8	83.3	74.1
October	26.3	49.6	82.6	78.9
November	25.5	44.1	75.8	79.8
December	.....	38.1	65.5	78.8

[1]Based on capacity of 52,515,875 tons Dec. 31, 1930; [2]on capacity of 51,490,680 tons; [3]on capacity of 51,069,895 tons; [4]on capacity of 50,329,750 tons. Capacities by American Iron and Steel institute.

November one year ago was 1,865,458 tons. The productions of September, October and November have been the lowest since September, 1921, with 985,795 tons. The all-time low was established in July, 1921, with 864,642 tons.

For the 11 months of this year, production has aggregated 17,282,634 tons, against 29,775,733 tons in 1930. The loss is 12,493,099 tons, or 42 per cent. It appears that 1931 will close with a total output of approximately 18,400,000 tons, as compared with 31,441,488 tons in 1930 and 16,506,564 tons in 1921.

Blast furnaces operating on Nov. 30 totaled 67, or 2 less than the 69 on Oct. 31. During the month, 4 merchant stacks were blown out or banked and 1 resumed operations, making a net loss of 3. Of the nonmerchant or steelworks furnaces, 2 were blown out and 3 resumed to make a net gain of 1 unit for this class. Since the 1931 high point of 116 active furnaces on the last day of March, the decline has been uninterrupted and 49 furnaces have become inactive.

Relating production to capacity, operations in November were at a rate of 25.5 per cent, against 26.3 per cent in October and 27.0 per cent in September.

Furnaces blown in during November were: In Ohio: Campbell A, Youngstown Sheet & Tube Co. In Pennsylvania: One Farrell, Carnegie Steel Co. In Maryland: Maryland E, Bethlehem Steel Co. In Alabama: Pioneer No. 2, Republic Steel Corp.

Furnaces blown out or banked in November were: In Ohio: Hamilton, Hamilton Coke & Iron Co.; Toledo B, Pickands, Mather & Co.; Mary, Sharon Steel Hoop Co. In Pennsylvania: One Swedeland, Alan Wood Steel Co.; Neville Island, Davison Coke & Iron Co. In Alabama: Pioneer No. 1, Republic Steel Corp.

The total number of potential blast furnaces in the United States has been reduced from 303 to 302 by removing from the list the Talladega stack at Alabama. This furnace, which is completely dismantled, was owned by Talladega Furnace Properties Inc., Birmingham, Ala.

Holland Earnings Off

Holland Furnace Co., Holland, Mich., domestic heating equipment, reports net profit in the 12 months ended Sept. 30 was $263,311, after all charges, including federal taxes. These earnings equal 38 cents a share on 432,196 common. The previous last report for the 12 months ended June 30, 1931, showed net profit of $713,080, or $1.43 a share.

Casting Output Is Better

Production of foundries of the Worcester, Mass., Foundry council was 1,479,247 pounds in October, against 1,830,240 in October of 1930.

Additional statistics of industry will be found on page 89 .

October, 1931, showed a gain over September, when 1,314,432 pounds were produced.

Fewer Boilers Ordered

Orders for steel boilers in October numbered 672 for 467,375 square feet, compared with 893 for 692,238 square feet in September, according to the department of commerce. In 10 months of 1931, boiler orders have totalled 7117 for 6,411,257 square

(Concluded on Page 89)

Industrial Men in the Day's News

John E. McCauley, Vice President and General Manager, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

THIRTY-ONE years ago he entered the Standard Steel Works; for the past 21 years he has been with Birdsboro Steel Foundry & Machine Co.

IN 1919 he became vice president and general manager, in which capacity he now serves

STEEL castings industry benefitted by his work as president; Steel Founders' Society of America in formulation of trade practices.

AN EVENTFUL time in the recent history of the steel castings industry in this country was the 2-year period expiring early this year, during which John Edmund McCauley served as president of the Steel Founders' Society of America.

Strongly in favor of co-operation to do away with unethical and unfair trade practices, Mr. McCauley presided over the society during a period of major accomplishment. During his term a complete survey of the steel castings industry was made and a plan formulated. A code of standard trade practices was evolved and adopted by the industry with highly beneficial results. A number of standardized forms, including a standard contract form, were set up and are being used extensively in the industry. A complete uniform cost and accounting system was adopted and, with slight revisions since, is being employed successfully by several leading companies in the industry.

Born on a farm near Mifflintown, Pa., in 1882, Mr. McCauley's parents moved to that town when he was one year old. He received his early education at the local school and graduated from high school. At the age of 18 he began his business career as machinist's apprentice at the plant of the Standard Steel Works, Burnham, Pa. His connection with the steel castings industry has lasted practically ever since. At the age of 20 he entered Swarthmore college, Swarthmore, Pa., and spent one year there, after which he spent a year at Pennsylvania State college. At 23 he went back to work, joining the Solid Steel Casting Co., Chester, Pa. He served first as foundry foreman and later as night superintendent. In 1907 he started working in a gang dismantling and erecting engines at the erecting shop of the Baldwin Locomotive Works at Eddystone, Pa., later having charge of the erecting shop at night. In 1909 he went back with the Solid Steel Casting Co.

The next year Mr. McCauley went with the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., as a castings salesman, later becoming assistant general manager. In 1919 he became vice president and general manager, in which capacity he still serves. Mr. McCauley is well-known in the industry for the organization he has built up at Birdsboro. Under his management the Birdsboro Steel Foundry & Machine Co. has grown from a steel casting jobbing foundry to one of the leading engineering organizations in the country, with personnel for designing and constructing equipment for the steel, linoleum, rubber, leather and insulation-board industries. The company also is an important designer and manufacturer of hydraulic machinery.

Mr. McCauley resides at Reading, Pa., 10 miles from Birdsboro. His chief hobby is golf and he is a member of the Reading and Berkshire country clubs. He also enjoys both fresh water and deep-sea fishing.

PAUL R. CLARK, identified with the expanded metal and fireproof materials business for 20 years, has been appointed manager of the New York branch of the Consolidated Expanded Metal Cos., Wheeling, W. Va., with headquarters at 103 Park avenue. Mr. Clark succeeds George Barnes, who has resigned from the New York position.

□ □ □

W. H. Mick, formerly with I. P. Morris De La Vergne Co., Philadelphia, has been appointed purchasing agent, Baldwin-Southwark Corp., Eddystone, Pa., holding company. He succeeds F. R. Tanker, now employed in the production department.

□ □ □

Ernest F. DuBrul, who as noted in STEEL, Nov. 30, has resigned as manager, National Machine Tool Builders' association, will open quarters as management consultant on the

13th floor, Enquirer building, Cincinnati, instead of at 1415 Enquirer building, as previously stated.

□ □ □

W. A. Tipton, formerly southwestern representative, Durabla Mfg. Co., New York, manufacturer of valves, has joined the sales forces of Wheatley Bros. Foundry & Machine Co., Tulsa, Okla.

□ □ □

E. T. Weir, chairman, National Steel Corp., Pittsburgh, has been made a trustee of the University of Pittsburgh.

□ □ □

Harry G. Uphouse, formerly Philadelphia district sales manager, Donner Steel Co., Buffalo, has become affiliated with the Penn Mutual Life Insurance Co., in Philadelphia.

□ □ □

Ralph N. Robertson, formerly chief mechanical engineer, Blaw-Knox Co., Blawnox, Pa., now is identified with the Andrews-Brawshaw Co., a Blaw-Knox subsidiary.

□ □ □

J. E. Duncan, who for the past few years has sold sheet steel in the Detroit district, is now affiliated with the sales department of the Marks Perry Steel Corp., Detroit.

□ □ □

William F. Halliday has been appointed sales manager, Dodge Mfg. Co. Ltd., Toronto, Ont., to succeed S. M. Bowen, who is to represent the company on the Pacific Coast.

□ □ □

Sewell L. Avery, president of the United States Gypsum Co., Chicago, and a director of the United States Steel Corp., has been elected chairman of the board of Montgomery Ward & Co., Chicago.

□ □ □

Ernest H. Geyer has been appointed district manager, Truscon Steel Co., Youngstown, O., at Milwaukee, where a warehouse is maintained and sales offices are located at 605 Straus building.

Feel Foreign Competition More Sharply in East

New York—Domestic sellers of steel increasingly are experiencing foreign competition. Imports are lower than in 1930, but not commensurately with the decline in consumption.

In 9 months of 1931 imports of structurals totaled 56,225 gross tons, of which 32,644 tons were received at New York. But of 31,790 tons of reinforcing bars imported, only 6161 tons arrived at New York. This port's share of 38,484 tons of other bars was 13,605 tons.

Boston has received in 9 months 2385 tons of foreign shapes, 974 tons reinforcing bars, 3889 tons other bars; Philadelphia, 2131 tons of structurals, 1893 tons reinforcing bars, 2189 tons of other bars; Baltimore, 2583 tons of structurals, 1126 tons reinforcing bars, 675 tons other bars.

Obituaries

W. C. PRENDERGAST, 52, retired steel executive, was killed Nov. 30 in a fall from a New York hotel window. Early in his career Mr. Prendergast was vice president of John C. Vance Iron & Steel Co., Chattanooga, Tenn. Later he was associated in various capacities with the Vance Import & Export Co., Lucey Mfg. Corp., Tacony Steel Co. and Penn-Seaboard Steel Corp. In 1927 he became connected with the Central Alloy Steel Corp. at Massillon, O., going to the New York office of the corporation in 1928 and retiring shortly after the Republic Steel Corp. was formed in December, 1929.

□ □ □

Turner S. Arnold, chief engineer, Page-Hersey Tubes Ltd., Crowland, Ont., died recently.

□ □ □

James Rowland Sr., 76, identified with the Philadelphia iron and steel industry for nearly 60 years, died Nov. 29. A native of Philadelphia, he took over the Kensington Iron Works from his father, the late James Rowland, and managed the company until his retirement several years ago.

□ □ □

Charles Babbidge, 83, who retired in 1921 as vice president, Newport News Shipbuilding & Dry Dock Co., Newport News, Va., died at Montclair, N. J., Nov. 26.

□ □ □

Charles H. Allen, superintendent of the merchant mills, Algoma Steel Corp., Sault Ste. Marie, Ont., died Nov. 25. He came from Sydney, N. S., in 1922 to the Algoma company.

□ □ □

Albert Breyer, 68, president of Breyer Bros., Whiting & Co., Waupun, Wis., manufacturing metal farm and barn equipment, died Nov. 21.

□ □ □

Joseph Born, 74, treasurer and general manager, Syracuse Hardware & Iron Co., Syracuse, N. Y., died at Syracuse recently. He was treasurer of the New York State Jobbers association for ten years.

□ □ □

James G. Lidgerwood, with his brother John H. Lidgerwood an owner of the Lidgerwood Mfg. Co., Newark, N. J., died at his home in Morristown, N. J., Nov. 30. Mr. Lidgerwood, who was 52 and active in civic affairs, was prominent for many years in the National Metal Trades association.

□ □ □

E. R. Griffith, 49, for 25 years traffic manager, Sharon Steel Hoop Co., Sharon, Pa., died at Akron, O., Dec. 1. Born at Reading, Pa., Mr. Griffith went to Sharon, Pa., in 1906 with the Pennsylvania and Erie railroads before joining the Sharon company, from which he resigned last spring.

□ □ □

J. W. Miles, long in charge of foreign engineering for the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., died at Irwin, Pa., suburb of Pittsburgh, Nov. 28. Recently he was appointed to take charge of engineering for the Canadian Westinghouse Co. Ltd. Mr. Miles, 37 years with the Westinghouse organization, was a graduate of Cornell university and a student of archeology.

□ □ □

Henry A. Pridmore, 49, identified with the foundry supply business for 30 years, died at Oak Park, Ill., Nov. 26. He had been associated with his father, the late Henry E. Pridmore, who founded the Henry E. Pridmore Co., remaining there until the company discontinued business in 1927. Since then Mr. Pridmore has been with the International Harvester Co., Chicago.

Edward A. Pridmore, a brother, is president, International Molding Machine Co., Chicago.

□ □ □

Harry T. Wicks, 71, president, Wickes Brothers, Wickes Boiler Co., and Allington & Curtis Mfg. Co., all of Saginaw, Mich., died at Pasadena, Calif., Nov. 20. He was born at Flint, Mich., where his father and uncle had established in 1856 the machine shop and foundry which were moved to Saginaw in 1860 then becoming Wickes Brothers. He was considered largely responsible for the development of Saginaw from a lumbering town to an industrial city and was well known in industrial circles.

□ □ □

Robert I. Clegg, 65, former associate editor of *Iron Trade Review* and *The Foundry*, died Dec. 3 at his home in Cleveland. Born in Lancashire, England, Mr. Clegg as a young man came to the United States to devote himself to writing on engineering and Masonic matters. In the early 1900's he became associate editor and machinery editor for *Iron Trade Review*, then published at Cleveland by the Iron and Steel Press, of which George H. Gardner was president. Mr. Clegg also contributed technical articles to *The Foundry* and at one time was identified with *The Iron Age*. In 1916 and 1917 he served as vice president of the Cleveland board of education. He was a member of the American Society of Mechanical Engineers and of the American Society of Civil Engineers.

MIRRORS of MOTORDOM

DETROIT

FORD MOTOR CO. again has delayed its purchase of steel sheets, strip and bars not only for the imminent production run on 1932 models for dealer and show purposes but also for a large proportion of its first quarter requirements.

For almost a certainty, the definite allocation and release was set for last Friday, Dec. 4, but Ford buyers again deferred action, which has been expected for several weeks, and now a definite allocation is scheduled for early this week. This leaves Buick and Chevrolet the two sustaining production forces.

After some experimenting, Ford has ordered the initial lot of headlamp shells for the 1932 models. The order was given a week ago; the first shipment was made Dec. 4.

These new headlights are No. 26 corrosion-resistant steel, blanked and drawn. Compared with current Model A shells, the new ones are a little wider, somewhat shallower, lack the hole in the dome. The first order was for 20,000.

The Kelsey-Hayes Wheel Co., starting on the new Ford wheels, which are slightly smaller in diameter, has put on one assembly line 5 days a week. The new Ford hub caps are corrosion-resistant steel with a slight increase in diameter.

Await Ford Showing

Formal announcement of the new Ford is not likely until late December or possibly early January. Even dealers have been denied a view. Several of the new jobs have been assembled complete both at Dearborn and at Murray Body, which is getting a larger share of Ford work.

There is nothing to indicate a major change from the original forecast of a revised 4-cylinder motor, a body 3 inches longer and slightly wider.

Not only is Murray Body certain of a generous share of Ford bodies but it also has taken a contract for Ford frames, for which it recently built a plant at Ecorse in the back yard of the Great Lakes Steel Corp.

Murray Body also is doing almost all of the coach work for Lincoln, last week producing daily 15 to 20 coach bodies for the new Lincoln eight.

Bodies for the Lincoln eight, not to be confused with the Lincoln twelve, are being made on the fourth floor of the Murray plant, and consistent with Ford's desires for secrecy the job is known as the "Blackford" so far as Murray's operating charts are concerned. Incidentally, the revised Lincoln eight will be offered at reduced prices, more in competition with Cadillac.

Graham Features Changes

Murray Body also has a good share in 1932 Hudson business. For the new Studebaker-sponsored Rockne, Murray has the contract for 100,000 sets of fenders.

With the new Rockne announced in the $585 and $685 classes the competition in the low priced field will be greatly intensified. Both Nash and Auburn are known to have done preliminary figuring on a low priced offering in a field dominated by Ford, Chevrolet, Plymouth, Essex, Pontiac and Willys. Auburn's new 12-cylinder car may sell for under $1000.

Graham's 1932 models apparently will have more innovations than are indicated thus far in any new offering. Aside from features recently described in this department, there is a new method of centering balance. This results in an extreme low center of gravity and it is claimed that at 60 miles an hour on curves the driver can take his hands off the wheel and the car automatically straightens out.

The new Grahams are 3 inches wider. The wiring, instead of being led under the car, will come up through the front windshield pillar post and run back under the top, with a removable panel exposing the entire system for repairs. The entire inside of the doors will be removable with one simple operation, making easier the lubrication of the window raiser. An initial lot of 300 of the new Grahams will be known as "Blue Streaks," the special paint job being a dull gun metal finish in blue

Hupp released some bodies for its 1932 models last week. The rear of the new Hupps will slope in symmetry with the sloping rear fenders.

Chevrolet, whose new models described last week were formally announced Dec. 5, has added employes at its gear, forge, axle and spring divisions in Detroit and is operating 4 days a week instead of 3.

Chevrolet, with Buick, has been a sustaining force in steel orders. Buick has stepped up its operations to 500 a day, 5 days.

An unconfirmed rumor puts Packard as a competitor next year in the $1500 class.

Ford is reported planning on cast iron brake drums for the 1932 models and to offer cast iron drum replacements for present Model A's. Campbell, Wyant & Cannon Co., Muskegon, Mich., is now making a cast iron brake drum. The Motor Wheel Corp. has a combination cast iron and rolled steel brake.

Iron Replaces Aluminum

In both the 1932 Chevrolet and the 1932 Oldsmobile, General Motors is returning to cast iron pistons. The pistons for the new Rockne will be tin coated cast iron. . . . Chrysler's steel buyer has resigned and as yet has no successor. . . . Studebaker will have a "red-light" burglar-proof lock as standard equipment in 1932, a lock easily closing the doors of the

car from the inside to prevent entry into the car while stopped in traffic. . . . Ford's plans for an assembly plant at Fairport, O., are pretty much in the discard, there being some basis for his attraction there by good local alkali deposits. . . . Just to show with what haste parts are being demanded by some of the motor companies, recently a release for rear fenders was asked by an automobile concern here and wanted in so short a time for assembly lines that the fenders had to be taken without rear lamp fender holes punched in. . . . Ford has just bought 5 acres fronting the Potomac river at Alexandria, Va., with no announcement as to development. The Southern Railway is nearby. His nearest assembly plant is at Chester, Pa.

Steel's Accident Frequency At New Low Rate in 1930

Accident rates in the iron and steel industry returned to the downward trend in 1930, the bureau of labor reports, having just completed its compilations. The frequency rates, which had advanced from 19.7 in 1928 to 25.1 in 1929, dropped to 18.6, lower than for any preceding year. The severity rate, which had reached its lowest level of 2.2 in 1928, but had risen to 2.6 in 1929, declined to 2.5 in 1930.

A decided contrast is shown by comparisons of last year's rates with those for 1907, when the frequency rate was 80.8, and the severity rate 7.2. The frequency rate represents the number killed or injured for every million man-hours of exposure; and the severity rate, the number of days lost as a result of accidents, for every thousand man-hours of exposure.

Will Furnish Gardens to Part-time Employes

Chicago — Several manufacturing plants located on the west side of Chicago are combining to furnish garden areas for part-time employes next season. University of Illinois also is behind the project. An 80-acre garden tract at Western and Cicero avenues has been leased, and it is estimated that 600 gardens can be furnished on this tract.

Among companies backing this project are Chicago Flexible Shaft Co., Western Electric Co., Kropp Forge Co., Edison Electric Appliance Co., National Malleable & Steel Castings Co., Hubbard & Co., W. D. Allen Mfg. Co., Victor Mfg. & Gasket Co. and Harrington & King Perforating Co.

Yields should average at least $100 worth of produce on each garden.

Here and There in Industry

McCONWAY & TORLEY CO., Pittsburgh, manufacturer of car couplers and other steel castings, has sold its business and good will to Donald Symington and associates, Baltimore. The business will be continued in Pittsburgh by the new interests under the name of the McConway & Torley Corp., with no material changes in existing personnel. The McConway & Torley Co. was founded in 1868 by the late William McConway, a pioneer in the manufacture of malleable iron and later of steel castings and in the development and promotion of the automatic coupler. The company also has manufactured a variety of steel castings for railroad and general industrial use since 1900. Donald Symington, president of the new McConway & Torley Corp., succeeding William McConway Jr., for many years has been general manager of the various Symington companies.

□ □ □

Philfuels Co., Detroit, G. G. Oberfell president, has changed its name to Philgas Co. It is a subsidiary of the Phillips Petroleum Co., selling its liquefied propane and butane gases.

□ □ □

Victor Aluminum Mfg. Co. plant at Wellsville, N. Y., has been bought by the Morton Waste Co., Syracuse, N. Y., on an auction bid of $12,000. Operations were suspended recently.

□ □ □

Ex-Cell-O Aircraft & Tool Corp., Detroit, has appointed Fred D. Hassler, 2905 Sterick building, Memphis, Tenn., its representative for the company's complete line in Tennessee, Arkansas, Mississippi and Louisiana.

□ □ □

Superior Tool & Die Co., 325 West McKinley avenue, Milwaukee, has changed its name to Superior Steel Products Corp., following development of a die set of steel plate with shanks and flanges welded. Kasimir Janiszewski is president and manager.

□ □ □

Alloy Metal Wire Co., Moore, Pa., manufacturer of corrosion-resistant steel, monel and nickel alloys, has opened a factory branch office at 501 Produce exchange building, Fourteenth street and Racine avenue, Chicago, in charge of R. L. Howe.

□ □ □

Inland Steel Co., Indiana Harbor, Ind., has given a contract to the Chicago office of the Surface Combustion Co. for two mantle recuperators to be used on its 14-inch billet mill furnaces. The recuperators are of the metallic type and replace regenerators.

□ □ □

Littleford Bros., Cincinnati, manufacturer of plate and sheet steel construction and road building and maintenance equipment, have opened a Chicago office and warehouse at 217 East Illinois street. H. M. Orschel will be Chicago district manager.

□ □ □

General Hardware Corp., Milwaukee, successor of the General Grinder Corp., has increased its capital from $50,000 to $100,000. In addition to tool grinders the company now is manufacturing bench vises, household tool grinders, power grinders and a mechanical fruit juice extractor. Van B. Hooper is president.

□ □ □

International Harvester Co., Chicago, is transferring production of farm and industrial tractors from Chicago to its Milwaukee works, leaving only the caterpillar type production at Chicago. Under the new arrangement, the heavy type wheel tractors will be concentrated in Milwaukee, the Farmall tractors at Rock Island, Ill., and the Chicago tractor works left clear of all except the track-laying type.

□ □ □

Mead-Morrison Mfg. Co., East Boston, Mass., is erecting at Port Washington, Wis., 27 miles north of Milwaukee, a coal bridge for the Milwaukee Electric Light & Power Co., which is building a steam generating plant there. The coal dock will have capacity for 440,000 tons of coal. The bridge will require 800 tons of structural steel and 220 tons of mechanical parts. Its unloading capacity will be 600 tons per hour.

□ □ □

Lincoln Electric Co., Cleveland, has moved its New York office from 136 Liberty street to the McGraw-Hill building, 330 West Forty-second street. The new offices include a showroom for equipment and facilities for demonstration of motors, welders, electrodes and innovations in welding technique. G. N. Bull continues in charge of the office. Branch offices have been established at Scranton and Allentown, Pa., D. Levenson in charge of the former and F. Shackleton of the latter.

EDITORIAL

Volume Alone Does Not Spell Prosperity

FOR six consecutive months the activity of the steel industry as measured by the rate of steelmaking operations has remained well under 40 per cent of capacity. In two of the months it was below 30 per cent.

The industry is hungry for orders. If, like Aladdin, steelmakers could make a wish and have it granted, they would agree unanimously that the object of greatest desire is tonnage. One can almost hear them plead, "Give us full order books and we will be satisfied."

In the light of existing conditions, this statement rings true. At first glance it would seem that a reasonable volume of business would put an end to most of the existing difficulties. A return of demand such as was experienced in 1928, for example, would appear to be the ultimate in good fortune. In that year, steelmaking was at the average rate of 84.67 per cent of capacity. What more could one ask than that the industry be restored to that level of activity!

Strange as it may seem to us in 1931, the leaders of the industry were far from satisfied with conditions in 1928. In that year the term "profitless prosperity" was in great vogue. This publication, in an article summarizing the chief topics of discussion at numerous conventions in the spring of 1928, said: "To thousands of individuals in the metalworking industries the question 'What is wrong with business?' has been of almost continuous concern for almost a year. They have discussed the paradox of 'profitless prosperity' from every possible angle."

In Period of Activity Steel Industry Complained of Poor Profits

President Charles M. Schwab, speaking in May, 1928, to members of the American Iron and Steel institute, said: "The low margin of profit in our industry is not conducive to sustained national prosperity. . . ."

It will be remembered that these complaints arose from comparisons of steel company earnings with those of manufacturing industries. In 1927 United States Steel had earned 5.17 per cent on its capitalization, while General Motors had earned 36 per cent. In 1928 earnings of 22 leading steel companies amounted to only 6.55 per cent as compared with over 10 per cent for all industries.

If steel company profits were unsatisfactory in 1928, a year of great activity, what can be said of those of 1931? How do earnings of the steel industry and the automobile industry compare in a period of depression? The question is answered in part by the following:

Steel Industry

	1928	1931	Per cent 1931 of 1928
Volume (per cent ingot capacity)	84.67	39.84*	47
Prices (STEEL's composite)	$35.50	$31.29*	88
Earnings (U. S. Steel monthly ave.)	$17,748,858	$4,718,161**	27

Automobile Industry

	1928	1931	Per cent 1931 of 1928
Volume (U. S. output, monthly ave.)	363,200	219,933*	65
Prices (U. S. Labor bureau index)	106.5	98.8*	92
Earnings (Gen. Motors monthly ave.)	$27,707,180	$10,828,377**	39

*Average for 10 months. **Average for 9 months.

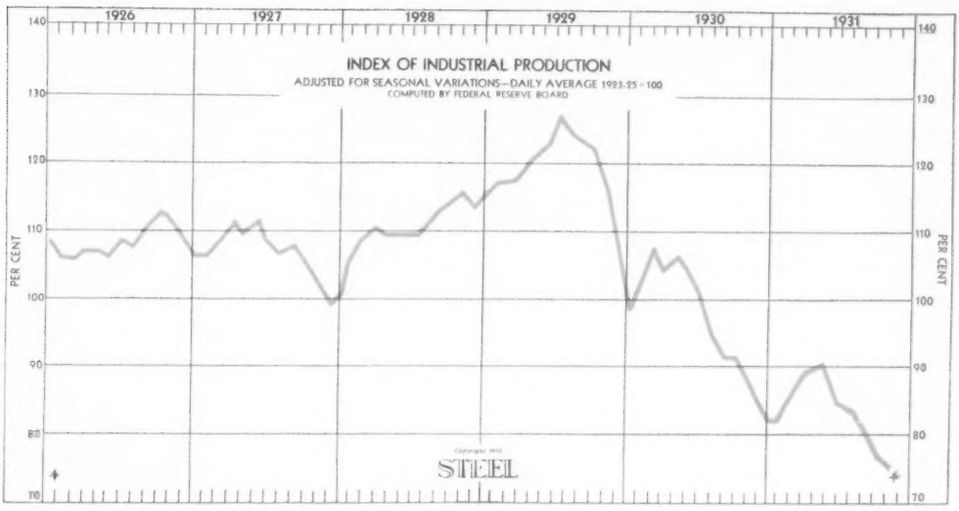
Are Steelmakers Charging Enough for Guarantees To Nation?

It is evident that the automobile industry is suffering less than the steel industry. In relation to 1928 figures, the motor car manufacturers in 1931 are maintaining greater volume, enjoying higher prices and earning more than the steelmakers. In other words, in good times and in bad times the automobile industry seems to be a more attractive business proposition than the steel industry.

This is a challenge that steel producers cannot ignore. The foregoing figures, of course, reflect only a small part of the situation; nevertheless it must be realized that something is radically wrong with the steel industry. Is it not possible that steelmakers—in carrying a tremendous burden of capitalization for ore, fuel and limestone reserves and necessary surplus furnace, mill and finishing capacity—are in reality providing to steel consumers everywhere a guarantee of uninterrupted supplies and service, the cost of which should be shared more equitably by purchasers of steel?

Steelmakers will not be satisfied by the mere restoration of volume. What they need is, first, an adjustment of their industry's capitalization to the safe minimum required to serve the nation efficiently, and secondly, a determination to charge enough for steel to provide an adequate return on their investment.

THE BUSINESS TREND



1930	
Oct.	87
Sept.	91
Aug.	91
July	94
June	100

1931	
Oct.	74
Sept.	76
Aug.	80
July	83
June	84

Uncertainty Still Holds Business in Check

AS AMERICAN industry swings into the final month of the year, the outlook for early marked recovery in activity is uncertain. A number of the developments which a month or six weeks ago seemed to offer promise of improvement now appear to have been overrated —at least they have not produced the favorable reactions that were anticipated.

The National Credit Corp., of which so much was expected, was of greatest benefit in allaying fears of financial panic. Thus far, however, it has been of little value in actually easing credit. If any appreciable amount of money tied up in frozen assets has been released, that fact has not been apparent to the majority of observers.

Plight of Railroads Responsible for Adverse Business Sentiment

A similar plan, pertaining to the real estate situation, was under discussion at Washington last week. Any scheme which can safely and properly ease the mortgage difficulty or can free the problem of home building from its present restrictions will be welcomed by the nation.

The railroads' plight continues unabated, although unusual efforts are being made to bring about voluntary adjustments in wages. The threat of financial difficulties abroad still is acute, and this factor continues to disturb the domestic situation. Another unfavorable factor is the delayed winter weather, which has slowed expected improvement in certain retail trades.

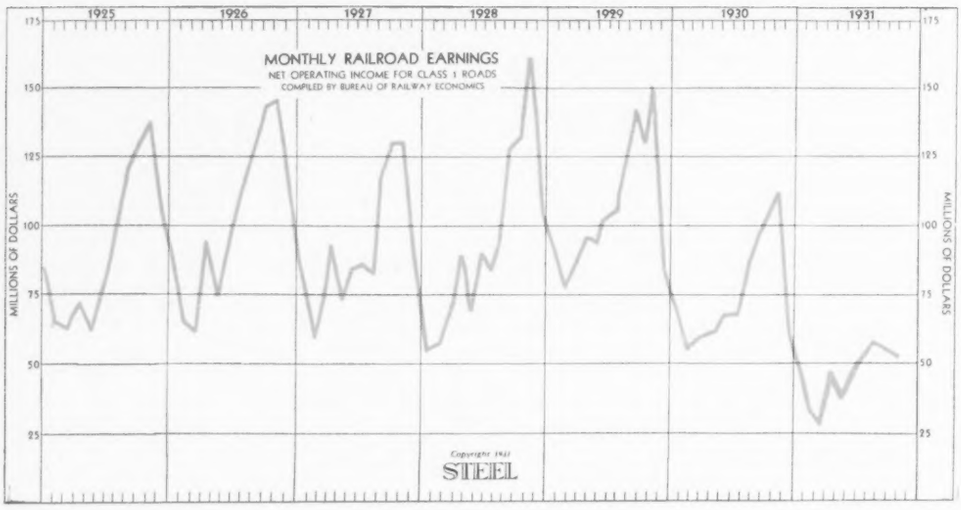
All of these factors combine to keep business leaders in a state of anxiety. The uncertainty is reflected in the steel industry by the postponement of orders from several important consuming groups—particularly the automobile industry. While sporadic improvements in demand carried steelworks operations above the 30 per cent mark for two weeks in November, the rate has again eased off, indicating that the improvement which started early in November was not supported by the strong underlying demand which is necessary for sustained gains.

Early Action of Congress Will Be Watched Closely by Industry

A new influence will be introduced this week when congress convenes. The President's message and the initial expressions of policies by leaders in the house and senate will be watched with more than usual interest by business. Legislation directly affecting industry probably will not materialize until after the first of the year, but the tone of congress, as expressed in the preliminary maneuvers, will cast its influence on business sentiment.

While the outlook for December is clouded by uncertainty, the chance for improvement early in the new year is promising. Steel resulting from continued operations at 30 per cent or under is not sufficient to supply the country's needs even at the present low ebb of its industries. For at least five months, steel requirements have been deferred by purchasers and sometime in the near future this accumulated demand will appear.

A development of immediate favorable import is the growing number of projects which will relieve unemployment over the year end. Carnegie Steel Co., Colorado Fuel & Iron Co., White Motor Co., American Shipbuilding Co. and others recently have announced contracts permitting them to insure employes of more stable employment during the next month or more.



Million Dollars

	1931	1930
Sept.	55.3	104.1
Aug.	55.8	95.6
July	56.5	83.0
June	50.1	69.1
May	41.2	69.3

Railroad Earnings Drop; Income for Nine Months Down Sharply

The September trend of railroad earnings continued downward, as net earnings dropped $540,148 from the previous month. Class I railroads for the month of September had a net operating income of $55,318,586, which was at the annual rate of 1.76 per cent return on their property investment; while for the same period last year net operating income totaled $104,434,777, or 3.39 per cent. For the first nine months of 1931, railroads had a net operating income of $407,660,068, which amounts to a return of 2.08 per cent on their property investment, compared with 3.44 per cent for the same period of 1930. Of the 171 roads represented, 36 operated at a loss in the first nine months of 1931.

Independent Sheet Steel Output Gains; Stocks Reduced Slightly

Production of steel sheets in October made a favorable gain over the preceding month, according to the report of the National Association of Flat Rolled Steel Manufacturers. Although sales by independent producers of sheet steel declined from 120,688 tons in September to 117,195 tons in October, total production gained from 116,842 tons or 32.0 per cent of capacity in September to 122,749 tons or 33.1 per cent in October. Production in October last year was at the rate of 50.6 per cent. Total stocks dropped for the eighth successive month to 37.0 per cent of capacity, thereby establishing the lowest level in many years. Shipments for consumption increased from 123,371 tons in September to 129,365 tons for October.

Production

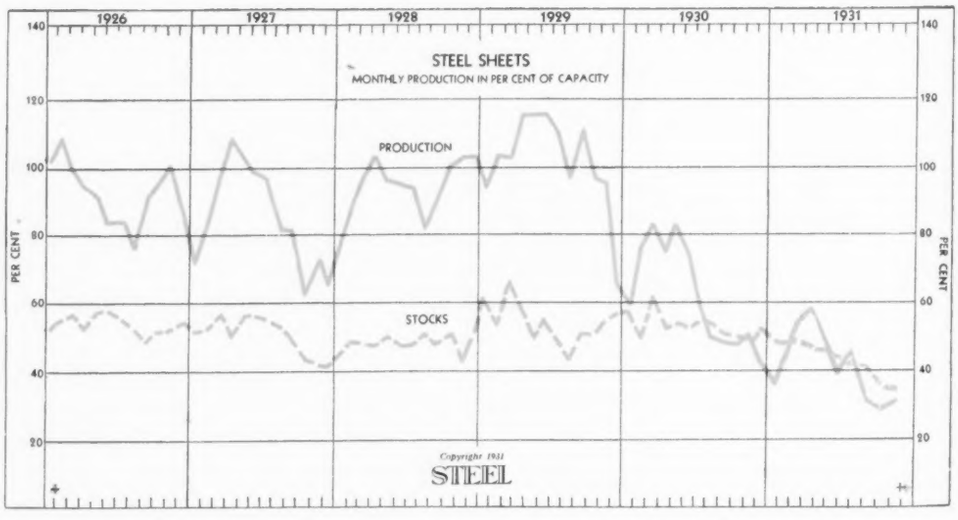
Per cent of capacity

	1931	1930
Oct.	33.1	50.6
Sept.	32.0	48.8
Aug.	34.9	48.6
July	46.3	50.4

Stocks

Per cent of capacity

	1931	1930
Oct.	37.0	49.4
Sept.	39.2	50.4
Aug.	42.1	50.9
July	42.6	54.9

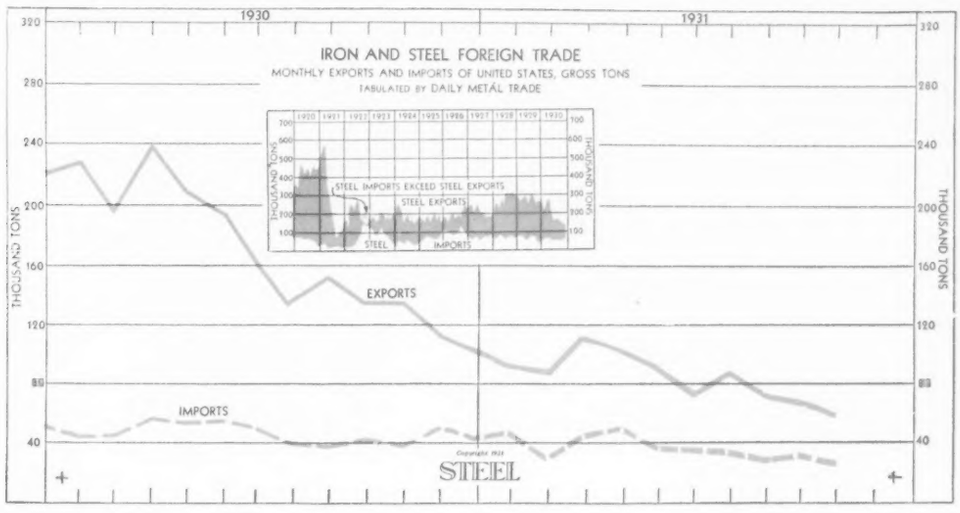


Exports

	Tons
Oct., 1931	59,335
Sept., 1931	69,768
Oct., 1930	131,845

Imports

Oct., 1931	29,401
Sept., 1931	30,966
Oct., 1930	38,344

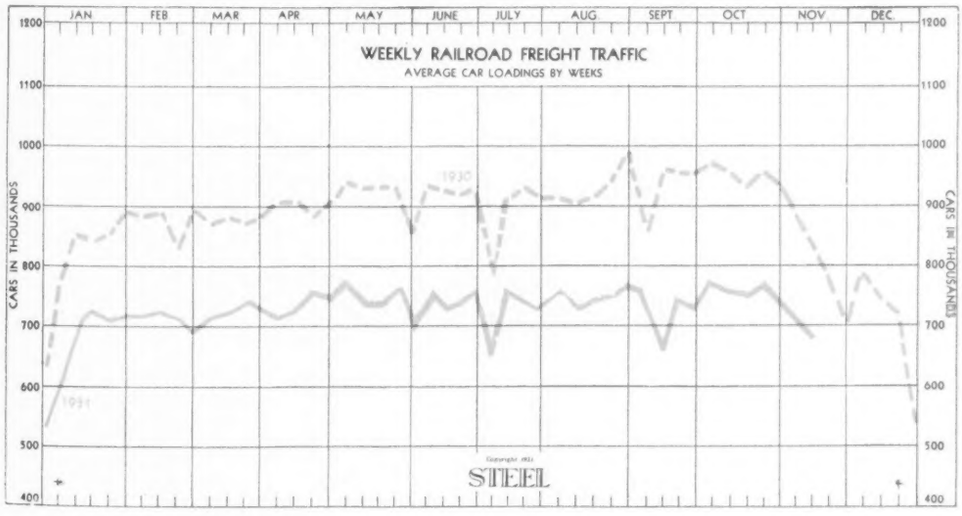


Iron and Steel Foreign Trade Recedes; Tonnage Lowest Since February

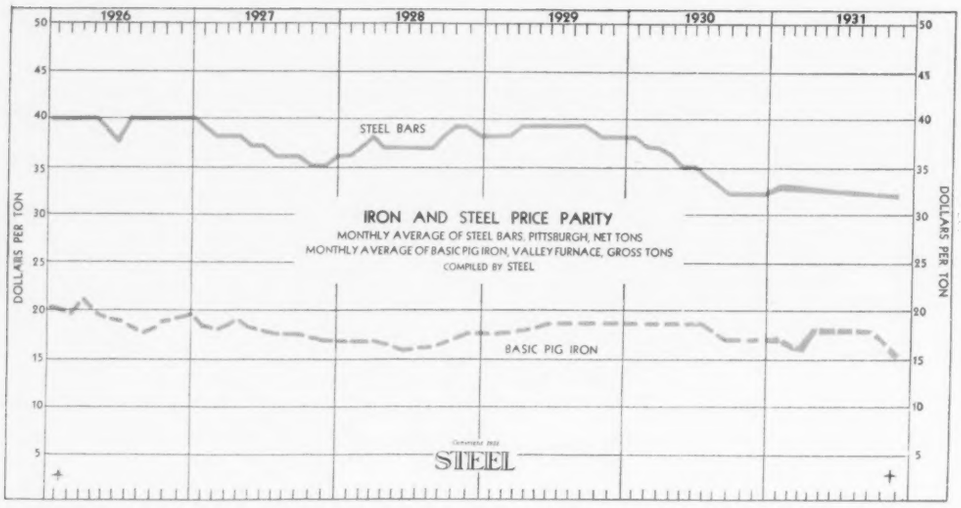
The volume of foreign trade in iron and steel took a downward step in October and in both exports and imports reached the lowest totals since February. Curtailed shipments in 27 of the 46 classes of products comprising the iron and steel group resulted in exports dropping from 69,768 tons in September to 59,335 tons in October, while for the same period last year exports made a slight gain of 800 tons. October imports were 29,401 tons, a drop of 1565 tons from September, the gains in 15 classes of products being insufficient to offset the reduced shipments in 16 classes. Canadian trade, usually the largest single outlet for steel products, dropped sharply to 16,522 tons.

Freight Car Loadings Decline After Establishing Peak in October

During the past four weeks revenue freight car loadings have experienced a steady drop. Loadings for the week ending Nov. 14 totaled 690,366 compared to 717,029 in the previous week and 740,363 for the week ending Oct. 31; and 769,673 for the week ending Oct. 24. The seasonal decline in the volume of freight has been less pronounced this year, loadings for the past four weeks having dropped 79,307 cars compared to 130,312 cars during the same period of 1930. For the year to date loadings have totaled 33,786,839 cars as compared with 41,613,590 cars in 1930 and 47,703,565 in 1929. Miscellaneous freight loadings for the week of Nov. 14 totaled 251,576 cars.



	1931	1930
Nov. 14	690,366	829,023
Nov. 7	717,029	881,517
Oct. 31	740 363	934,715
Oct. 24	769,673	959,335
Oct. 17	761,719	931,105
Oct. 10	763,864	954,782
Oct. 3	777,837	971,255



Steel Bars

	1931	1930
Nov.	$32.00	$32.00
Oct.	32.00	32.00
Sept.	32.00	32.00
Aug.	32.00	33.00
July	32.00	34.00
June	33.00	35.00

Basic Pig Iron

	1931	1930
Nov.	$15.00	$17.00
Oct.	16.50	17.00
Sept.	17.00	17.75
Aug.	17.00	18.00
July	17.00	18.20
June	17.00	18.50

Prices of Steel Bars and Basic Iron Diverge Slightly in November

Considering the dullness of iron and steel markets and the unsettled condition of business, prices have displayed remarkable stability. Such fluctuations as have been noted in recent months have been orderly and within narrow range. Since the mid-year when the spread between steel bars and basic pig iron was $16, the price of bars has eased slightly and quotations of basic iron have been revised downward by gentle stages to $15, valley furnace. With bars still quoted at $32, the spread—based on averages for November—is $17. In 1928 and 1929 when business was brisk, the spread between iron and steel exceeded $20.

Automobile Output Is Curtailed Sharply in October

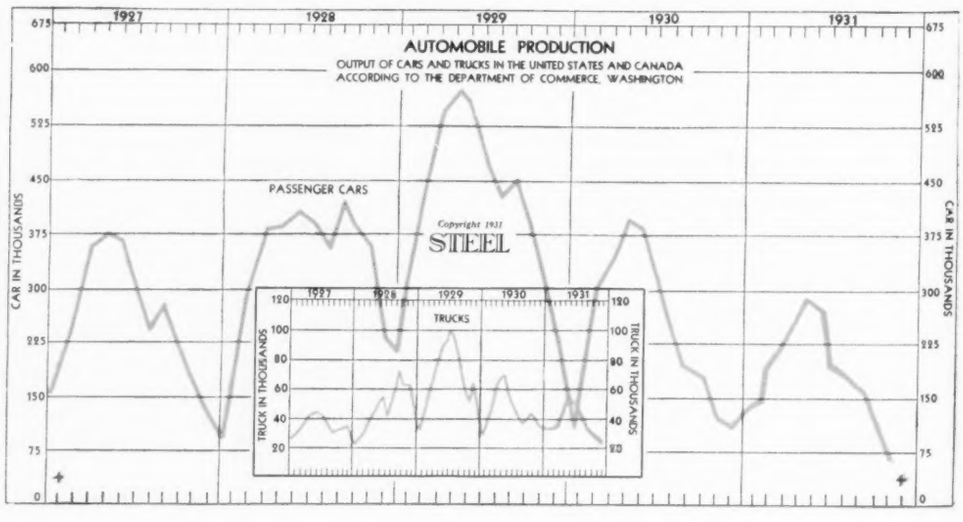
Automobile production in the United States and Canada in October totaled only 81,582 units, according to the monthly report of the United States department of commerce. Of this amount 22,406 were trucks, compared with 31,876 in September. The output of 59,176 passenger cars in October is a sharp drop from the 111,336 units of this type turned out in September. November figures are certain to be disappointing, inasmuch as the industry was operating at an extremely low rate. Ford and Chevrolet, which account for a large percentage of the normal output, were practically marking time during the greater part of the month.

Passenger Cars

	1931	1930
Oct.	59,176	117,014
Sept.	111,336	182,049
Aug.	158,851	190,864
July	186,258	230,761

Trucks

	1931	1930
Oct.	22,406	41,928
Sept.	31,876	46,557
Aug.	32,890	43,296
July	36,923	44,960



BY MAURICE TAYLOR

Welding Technician,
Lincoln Electric Co.

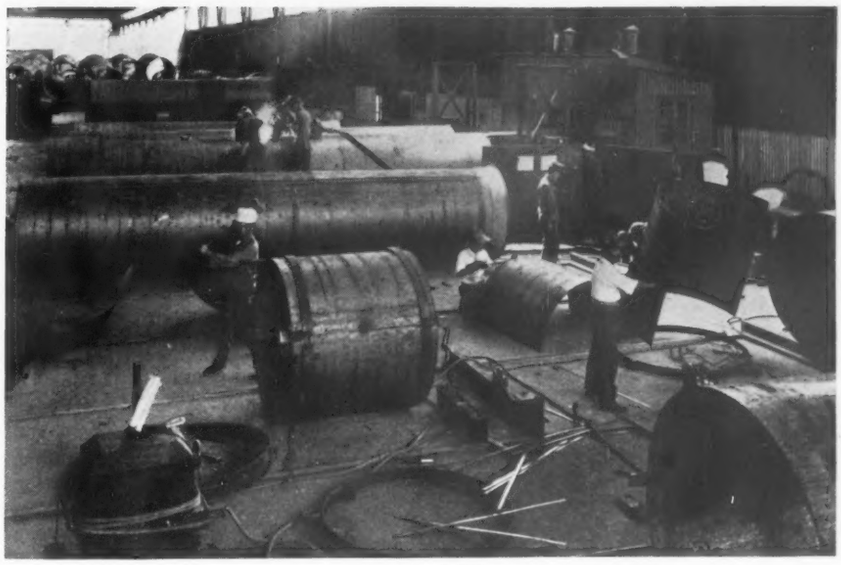


Fig. 1—General view in pipe shop of Kawasaki Dock Yard Co. Ltd., Kobe, Japan

Manufacturing Steel Pipe in Japan

INDUSTRIAL progress in the Far East is championed by the Japanese—in spite of a social structure incompatible with European or American efficiency, earthquakes, poor climatic conditions and a paucity of natural resources. The writer's experience in Japan, while attempting to install an efficient pipe manufacturing procedure, parallels some of the experiences of American engineers in Russia.

The Japanese engineer and executive is a sublime and cheerful theorist. Even those engineers with American educations have no shop training and experience. On the other hand, they are courteous, affable, charming and understanding of text book learning and research. The Japanese engineer is not bound by industrial tradition. If a process seems efficient, he investigates; if it works, it is adopted. The Kawasaki Dock Yard Co. Ltd., Kobe, is a large industrial plant manufacturing everything from electric fans to battleships. The new 10,000-ton cruisers for the Imperial navy are built there, and arc welding is used extensively, six welding machines being in operation in the dock yard alone. Arc welding is used wherever possible by these people—in construction, production or repair. Fig. 4 shows an example of their work, a 30-foot overhead crane which was cut in half and a new 30-foot section fused into the middle. The result is a crane of 60-foot span, on which welding was used in numerous ways.

It was but natural then that with such efficient examples as these the latest American pipe manufacturing methods should have been sought when contracts were received for several miles of large-diameter steel water pipe. The installation consisted of two tractor mountings for the shielded arc process of automatic welding developed by the Lincoln Electric Co., Cleveland. Later a third unit was added. The automatic shielded arc process of welding uses a carbon arc, focused on the line of fusion by a magnetic field, this al-

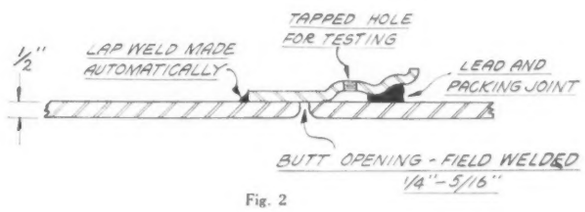


Fig. 2

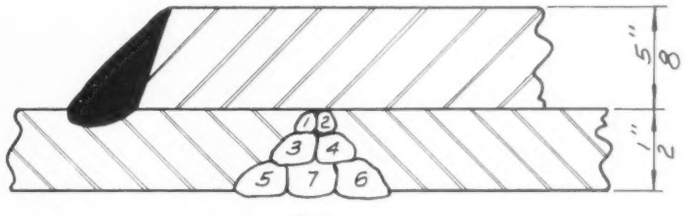


Fig. 3

Fig. 2—Type of joint used in making field connections. Manual overhead welding on the inside of the pipe is required. Fig. 3—Each joint is made from seven beads, this illustration showing the location of each

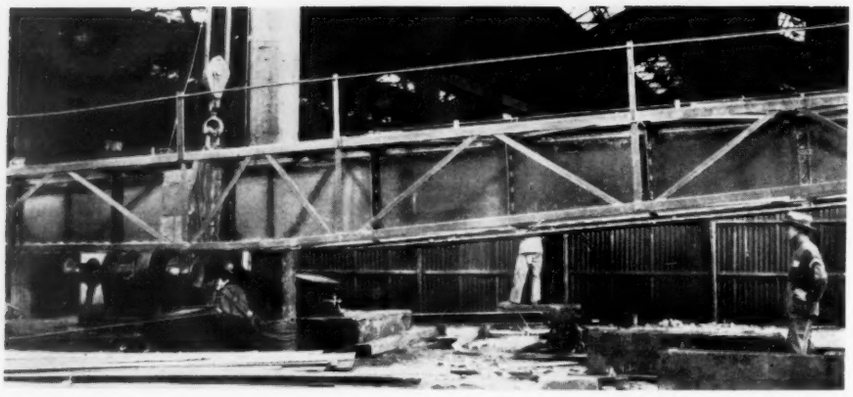


Fig. 4—The Japanese employ welding whenever possible. This 30-foot overhead crane was cut in half and a new 30-foot section arc welded in place to give a 60-foot span

lowing high welding speeds. The arc is shielded by a fibrous autogenizer which is fed automatically into the arc. The tractor mounting is self-propelled, is water-cooled, and can be adjusted for any type of work. A wire feeding bead now is supplied with this carbon arc process, but in this application such an installation was unnecessary.

For pipe manufacture with this process the plates are cut and rolled into half sections and butted together with a ⅛-inch filler strip as shown in Fig. 5. These filler strips are tack welded at 36-inch intervals. In Japan pipe over 2000 millimeters (79 inches) in diameter requires four plates, rolled into quarter sections. This is because of the narrowness of the plate which is made from Chinese ore and is rolled in the company's own mills. These plates, containing 0.8 to 0.10 per cent carbon, were used in ½ to ⅝-inch (12 to 16 millimeter) thicknesses, depending upon the diameter of the pipe. Because this pipe was to be flanged on one end for field connections, the filler strip was flush with the inner diameter of the pipe on the flanged end and flush with the outer diameter of the pipe on the unflanged end. The purpose of the filler strip, of course, is to provide additional metal at the point of fusion.

Welds Made Simultaneously

The pipe is manufactured in lengths of 6700 millimeters (264 inches) with the general procedure as follows: After the plates have been rolled and the filler strip inserted and tacked, the tractors are set upon the top of the pipe and on the inside of the pipe. The arcs are struck and both welding operations can be performed simultaneously. As soon as the first pass of the tractors is completed, the pipe is rotated for the second pass.

In this country, speed and strength are major factors in the use of the automatic shielded arc welding process. In Japan, with labor so cheap, strength and the saving in material are the major factors. One company, welding large pipe manually, computes 75 per cent

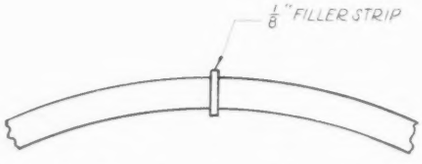


Fig. 5—To form pipe, plates cut and rolled into half sections are butted together with a ⅛-inch filler strip and automatic arc welded inside and out

of the cost of each length as the cost of electrodes. This is because of the old style of Japanese electric welding machines and the inferior electrodes, and explains why the high speeds possible with the automatic shielded arc process were not fully utilized in Japan.

Fig. 1 shows a general view of the pipe shop. Perhaps the discerning reader may discover the author's handwriting on the first long length of pipe. Many Japanese read English but do not understand it vocally. In the background a length of pipe is to be seen in the flanging press. The pipe was heated before striking, and in no case did a weld fail under this operation. Fig. 7 shows a close-up view of the flange at the weld.

Flange Is Lap Welded On

The welding equipment set up as described is used for the manufacture of pipe 1300, 1500 and 2100 millimeters (51, 59 and 83 inches) in diameter. On the 2100-millimeter (83-inch) pipe the flange is fused to the pipe separately. For this, a lap weld is specified and the pipe is rotated below an automatic welding head.

Arc welding also is used to tie the sections together in the field, the type of joint being shown in Fig. 2. The welding of such a joint manually requires overhead welding on the inside of the pipe. Three difficulties are encountered: First, overhead welding is difficult; second, Japanese electrodes are not adapted to overhead welding; and third, Japanese welding machines do

Fig. 6—Specimens welded by the shielded arc process. These welds, which fractured as explained in the accompanying article, were made by an operator inexperienced in the use of the shielded-arc type of electrode

not have the arc stability or current for good overhead welding.

The purpose of this joint is to give an easy method of testing in the ditch. This pipe is being installed in a district where no bell-holes can be permitted and where the pipe is required to be tested hydrostatically upon completion of the field joints and the ditch filled immediately. Water is admitted through the tapped hole and pressure applied—the welded joint then is inspected on the inside for leaks. With the test satisfactory, the tapped hole is plugged and the joint has the lead packing as well as the weld to insure against possible leakage in the future. Most reliance, however, is placed on the welding.

This is the oriental idea of a super safe connection. Such precautions may seem unnecessary, but let it be said that Japanese taxicabs are provided with two drivers and Japanese buses carry a crew of three. The additional safety afforded by such measures appeals to the Japanese people. Nevertheless, the advantages of welding are so great that this method of construction was adopted.

Seven beads are necessary at each joint and Fig. 3 shows the location of these beads. For beads 1 and 2, electrodes of ⅛-inch diameter are used, 3/16-inch electrode being used for the other 5 beads. With Japanese equipment 15 electrodes of ⅛-inch diameter and 48 of 3/16-inch diameter were required to make 11 linear inches of weld. The time required was 3 hours.

Welding Progresses Slowly

The apparently excessive amount of electrode is due to the fact that the rod was a very heavily coated one not well adapted to overhead work, consequently there was an excessive amount of spatter. Using an American heavily-coated electrode and the shielded arc process, 4 electrodes of ⅛-inch diameter and 10 of 3/16-inch diameter were required for 12 inches of weld. The welding time, including cleaning, was 45 minutes.

This was done by a man entirely unfamiliar with the American shielded arc which explains the length of time, for a good American operator would probably do this same overhead work in 20 to 25 minutes.

Those figures are alone a commentary on welding in Japan. Tested, the Japanese specimens broke at 33 to 40 kilograms per square millimeter (46,800 to 56,700 pounds per square inch) while the shielded-arc specimens broke at 55 to 58 kilograms per square millimeter (78,000 to 82,300 pounds per square inch). Fig. 6 shows the shielded arc specimens. The specimen on the left broke in the weld, through which holes had been drilled, at 58 kilograms per square millimeter, or about 82,300 pounds per square inch. The sample shown in the center, with the weld ground flush, broke in the plate at 41 kilograms (58,200 pounds); and the sample at the right, with the weld left as deposited, broke in the plate at 40 kilograms (56,700 pounds). These tests also were made by an operator not practiced or skilled in the use of this type of electrode. Test samples welded by the automatic shielded arc showed similar results.

Fig. 7—Close-up view of automatic shielded arc weld in pipe after flanging. No flaws or fractures resulted in the weld

Welding in Japan has progressed under difficulties. The latest processes and methods are available, but are not yet in wide use. In spite of this tremendous handicap, however, Japanese welding engineers and welder operators obtain remarkable results.

Produces Aluminum Paint For Industrial Uses

As an addition to its line of protective paints, Semet-Solvay Co., 61 Broadway, New York, is introducing an aluminum paint, which, it is said, can be applied successfully over metal, wood, stone, brick, concrete or plaster. Used as a primer on wood, it seals the pores to prevent penetration of moisture and subsequent blistering and peeling of the finished coat.

The highest grade of aluminum powder is used as the pigment, this pigment being made by stamping pure aluminum into tiny, thin flakes. As the paint is applied to a surface, many of the flakes rise to the surface of the varnish vehicle to form a leafed film, or a veritable coat of metal.

Salient features enumerated by the manufacturer are: Metallic coating impervious to moisture, sun's rays and most corrosive gases; simply applied with brush or spray gun; quick drying and catches little dirt; completely hides undersurface with one coat; reflects light and remains clean; easy to wash; and is economical.

When used on new metal, or old work which has been sandblasted or otherwise cleaned, the manufacturer recommends use of its red oxide as a primer. This rust inhibitor, it is claimed, adheres tenaciously to the metal surface and provides sufficient tooth for the finishing coat.

The paint is sold in 1 and 5-gallon double-compartment cans containing correct amounts of powder and vehicle. Just before painting, the trayful of powder is stirred thoroughly into the vehicle. The paint then is ready for brush application, but for spray gun a small amount of linseed oil and drier should be added to reduce it to proper consistency.

Specifies Safe Practices In Heat Treating

"Safe Practices in Heat Treating" is the title of an 8-page pamphlet published by the National Safety council, 20 North Wacker drive, Chicago, as No. Au.-1 of its industrial safety series. Discussed are phases of the subject common in most heat treating departments, particularly as they relate to safety of the personnel. The material is intended primarily for the supervisors of men subject to the hazards of heat treating operations.

The pamphlet was prepared by Norman Kiser, safety engineer, Studebaker Corp., and R. H. Ferguson, safety engineer on the staff of the council, under the direction of the engineering committee of the automotive and machine shop section of the council and approved by a committee of the leading safety engineers of the country.

Submit Standard Symbols

A proposed standard covering symbols for mechanics, structural engineering and testing materials has been submitted to the American Standards association, 29 West Thirty-ninth street, New York, for approval as American standard by the sectional committee on scientific and engineering symbols and abbreviations.

This submission follows approval by the sectional committee and the five sponsors—American Association for the Advancement of Science, American Institute of Electrical Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers and Society for the Promotion of Engineering Education.

Adapts Rotary Side Trimming Shears To Light-Gage Plate and Strip

WITH the rapid development of wide hot strip mills, continuous plate mills and manufacture of electric welded pipe, need has arisen for a rotary side trimming shear similar to those used in the plate industry but featuring smaller capacities and higher speeds. In response to this demand, the United Engineering & Foundry Co., Pittsburgh, recently developed and installed a new shear for this purpose.

Two Pairs of Rotary Knives

This shear, shown in the accompanying illustration, is for cold mild steel of 0.50 per cent carbon or under and has a capacity of 60 inches maximum width, 18 inches minimum width and thickness from ½-inch to the thinnest gages. The capacity in width, however, is practically unlimited as almost no changes in design are involved to suit the conditions.

The principle of the machine is that of two pairs of rotary knives, one on each edge of the plate, all driven, which trim any desired amount of scrap from the plate or strip and deliver it through chutes into rotary scrap shears at the rear of the machine where it is chopped into short lengths, convenient for handling and remelting.

Adjustments on the shear include sliding traverse for different widths of strip, operated by ratchet wrench and parallel screws with indicator reading in feet, inches and fractions; parallel vertical adjustment of upper knife arbors by handwheels and worm gearing of standard screwdown type; horizontal setscrew adjustment to regulate center line relation of upper arbor to lower; and spanner collar adjustment to compensate knife wear and adjust longitudinal relation of upper knife to lower in terms of extreme accuracy.

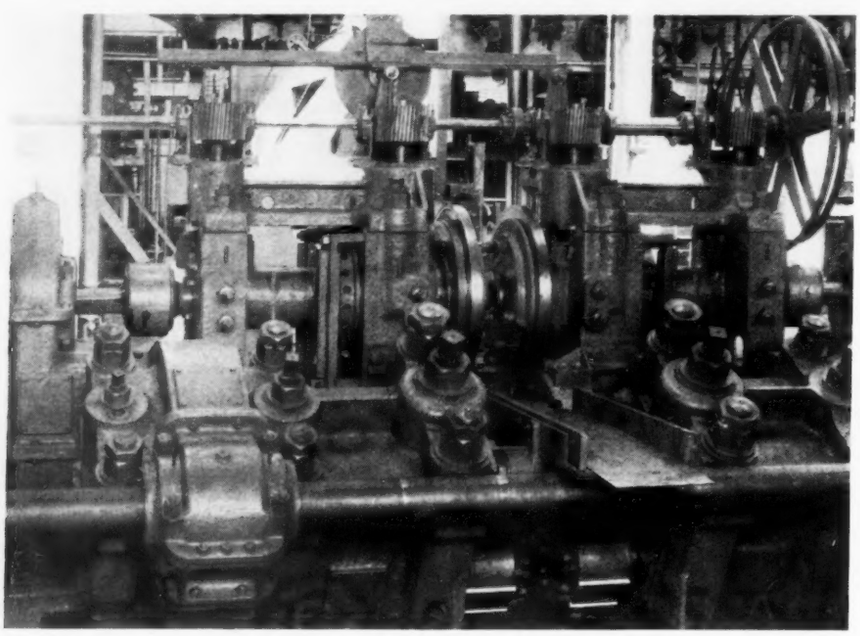
The main drive is of the all-roller-bearing type, with automatic lubricaton system, entirely enclosed, direct connected to the lower knives and having universal spindles to the upper knives. Arbor bearings are bronze with pressure grease lubrication. The rotary scrap cutter pinions are double helical, completely inclosed and running in oil.

Knives of Different Size

Two features of the company's larger side trimming shear are incorporated in the new machine—one knife in each pair being much larger in diameter than the other, and one knife in each pair having a different vertical center line than the other, which can be adjusted. These two features are said to guarantee the accuracy of width, camber, parallelism and squareness of edge.

The machine in the illustration has large top and small bottom knives, but this can be reversed to suit special conditions. Successful operation of the shear requires a correct type of approach and delivery table with guides for the trimmed strip and guides for the scrap.

According to the manufacturer, the machine is powerful and heavy, does not vibrate or chatter, nor will it spring after once being set. As compared with the larger machine handling heavy plates, it has been simplified to have fewer parts and greater accessibility. It is built almost entirely of steel. Similar machines in smaller sizes and higher speeds are contemplated for lighter work on steel and nonferrous metals.



Rotary side trimming shear with knives set in the narrowest cutting position. The machine has a capacity for thickness up to ½-inch and 60 inches maximum width

Sodium Vapor Lamp Holds Possibilities for Future

Even though today's incandescent lamp has a light-producing efficiency of less than 10 per cent, few if any radical improvements can be expected; other light sources, such as sodium-vapor lamps, must be developed if decidedly increased efficiencies are to be obtained. Sodium-vapor lamps now being studied by research engineers are the most efficient artificial light sources yet produced, but much work remains to be done before an adequate lamp is to be had.

According to L. A. Hawkins, engineer, research laboratory, General Electric Co., Schenectady, N. Y., who recently addressed the Illuminating Engineering society in Pittsburgh, all known elements which could possibly make good lamp filaments have been tried, but none can compete with tungsten. Some alloy of tungsten or some other compound might conceivably have advantages over the pure metal, but all likely alloys and compounds have been tried out and, although a few were found which gave slightly higher efficiencies, they possessed inherent disadvantages which outweighed their merits.

Krypton gas would be better than argon in present lamps and xenon would be better yet, said Mr. Hawkins, but both occur in the atmosphere in such minute quantities compared with argon that the cost of their extraction would not justify the relatively small increase in efficiency.

For materially higher lamp efficiencies we must look to other light sources than an incandescent body, he declared. The sodium in the sodium-vapor lamp attacks ordinary glass, but good progress has been made in producing sodium resisting glass. This lamp is several times more efficient than the mazda lamp and in spite of its rather unpleasant characteristic color of yellow, is likely to be used, alone or in combination with other lamps for color correction where high luminous efficiency is the main desideratum.

4 HIGH CONTINUOUS MILL

DESIGNED and BUILT by Mesta

Four-High Continuous Hot Strip Mills

Four-High Continuous Cold Strip Mills

Hot Strip Coilers — Flying Shears — Slitters and Trimmers

Tension Reels — Feed Reels — Levelers

Continuous Pickling Machines

Scrubbing Machines

MESTA MACHINE CO., PITTSBURGH, PA.

Engineer Has Important Role In Stabilizing Industry

THAT research, engineering, and technological progress has been made despite retarded business conditions is evident in reports and papers presented at the fifty-second annual meeting of the American Society of Mechanical Engineers in New York, Nov. 30-Dec. 3. While in some instances limited, advancement is noticeable in all branches embracing the engineering profession, especially in the uses and fabrication of steel and alloys, design and economic operation. Close to 2000 attended the sessions.

The most important step towards business stabilization, said Virgil Jordon, economist, McGraw-Hill Publishing Co., New York, is revision of the Federal Reserve act; first, to insure great security for bank depositors and prevent repetition of recent collapse of banks; and second, to insure better access to reserve credit resources for member banks.

Speaking on the same subject, Paul M. Mazur, Lehman Bros., New York, declared that to avoid future depressions, it is essential to take the general economic situation out of the arena of political intrigue by establishing an agency necessarily official or semiofficial to direct economic progress.

Must Set Up Reserves

James W. Hook, president, Geometric Tool Co., New Haven, Conn., pointed out that stable employes constitute approximately 40 per cent of those out of work. In the future, he said, this group must be assisted by employers through medium of reserves set up during profitable years and used in periods of low employment to maintain a reasonable portion of normal income as well as to pay liberal dismissal wages to those dropped from payrolls.

Replying to critics of the "machine age," the technological report of the society said: "Be it a blessing, as most of us still believe, or something to be feared as enslaving and crushing those who invoke its power to aid men in controlling his material environment, as many others contend, the spirit of technological progress is an undeniable factor in life, in bad times as in good.

"By means of it, if by any means at all, the materialism which to some is its most potent menace may evolve into a functionalized routine, releasing men of future generations from grubbing and back-breaking occupations for the more abundant development of their personalities.

"Long after recovery or subsequent depressions shall have effaced the memory of this one, men will make daily use of the George Washington bridge over the Hudson river and greater bridges made possible because of what has been learned in its building."

Calls for Militant Engineers

Making a plea for militant engineers, retiring President Roy V. Wright declared that harsh and severe criticisms directed at the engineer in recent years should react to bring members of the profession to a more critical view of their part in economic progress.

"We need militant engineers—aggressive and constructive—who will enthusiastically devote their energies to building up the engineering profession, raising it to higher levels, and will vigorously take the offensive in helping to find a solution of some of the great economic problems which we are now facing," he said.

"The Temporary Emergency and 20-Year Plan" was the theme of W. B. Donham, dean of the graduate school of business administration, Harvard university, Cambridge, Mass., who delivered the Towne lecture. An economic general staff to act as a general thinking body for the nation, with no control or espionage powers, containing men chosen by representatives of the government of industry and of labor, was advocated by Dean Donham.

Conrad N. Lauer, president, Philadelphia Gas Works, Philadelphia, was installed as president of the society at the annual business meeting. The complete lineup of new officers was announced on Page 28 of the Nov. 2 issue of STEEL.

Honorary memberships were conferred upon Calvin W. Rice, for 25 years secretary of the society; and Dr. Palmer C. Ricketts, president, Rensselaer Polytechnic institute.

Albert Kingsbury, president, Kingsbury Machine Works Inc., Philadelphia, was recipient of the A.S.M.E. medal as well as a John Scott medal, the first "in recognition of his research and development work in the field of lubrication," and the second "for invention of a thrust bearing for use in ships and heavy machinery."

Foresees Wider Use of Chrome-Nickel Steel in Conveyor Systems

WHEN properly made, 18-8 chrome-nickel steel alloy is truly stainless for general uses in conveyor systems, both as to itself and products in contact with the material. Nothing lower in the scale of chrome and nickel content will uniformly resist fatty acids and fruit acids, according to Nixon W. Elmer, consulting material handling engineer, Oak Park, Ill., who presented a paper on rustless steel conveyors, their availability, application and use.

Although chrome-nickel steel is ideal for many purposes, especially in the food industry, its cost works against its general use for conveyors, according to Mr. Elmer. However, he did predict rapid progress in its use as soon as patent and licensing policies are improved on a tonnage production basis, and when metallurgists produce 18-8 from chrome ore direct. But until that time comes, he expressed the view that it was economically impractical to make general use of the steel for rolled shapes and shafting.

There is a trend toward longer conveyors and heavier loads per foot of length resulting in the use of multiple drives on a single strand of conveyor chain. This keeps the weight and cost of chain and carrier units down, and such a design for floating drives for conveyors was discussed by N. H. Preble, Jervis B. Webb Co., Detroit. Two or more drives at considerable distances from each other automatically synchronized, maintain the proper driving action at each drive point.

Recording instantaneous tool pressures in machinability studies was outlined by O. F. Gechter and H. R. Laird, Western Electric Co., Chicago. The device used is the fundamental part of equipment employed at the Chicago plant to determine the relative machinability of die-cast aluminum alloys. The device permits measurement of the three tool-pressure components during machining short test pieces. Rigid tool mounting and the recording of sudden pressure changes are made possible by the use of the piezo-electric pressure-measuring method.

Considerable attention was devoted to photoelastic study, papers being

Give your operating men ten minutes with this —

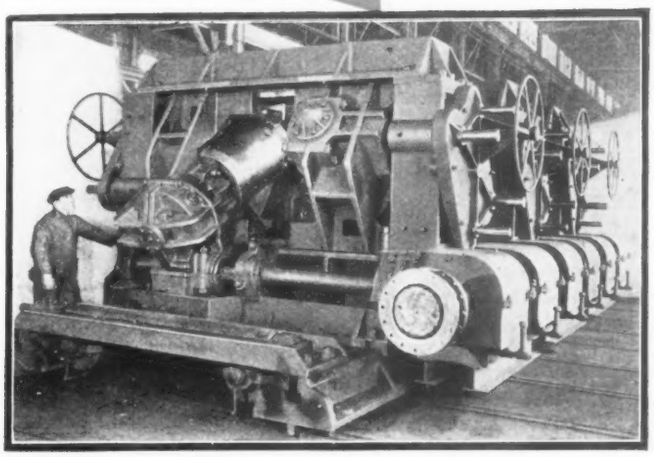
JUST ten minutes with this working model of the TREADWELL Straightening Machine *(Abramsen Design)* and you will have the whole picture of straight tubing, and lower straightening costs.

Ask to have the small model of the Treadwell Straightener illustrated sent to your plant so your operating men can study it carefully and report on its profit possibilities on your work.

and they will want this

Treadwell Straightening Machines are built in sizes to straighten tubing from ⅛" to 26" dia.—and rounds up to 6" dia.

Treadwell Engineering Company
Easton, Pa.



TREADWELL

Rolling Mills—Threading & Cutting-Off Machinery—Special Machinery—Iron & Steel Castings

given on the subject, applying to various materials, by Max M. Frocht, Carnegie Institute of Technology, Pittsburgh, and a joint paper by A. G. Solakian and George B. Karelitz, mechanical engineering deparment, Columbia university, New York.

Progress in the use of cemented carbide, stellite and other hard cutting materials is evident. Questionnaires, 13 months apart, reveal in answers to the second not only an increase in the number of uses, but also a greater utilization by shops formerly employing them in a limited way. This was brought out in the progress report of the subcommittee by Coleman Sellers, executive engineer, William Sellers & Co. Inc., Philadelphia. The report covered in detail replies as to the use of hard cutting materials, the grinding of such tools, lapping and honing and other data compiled as to results. While a few unfavorable replies were received, the response as a whole is favorable, far outweighing the number and reasons offered against.

Compare Cutter Efficiency

Based on laboratory tests with a single-toothed pendulum-actuated milling dynamometer some interesting data were obtained by Prof. O. W. Boston and Charles E. Krause, University of Michigan, Ann Arbor, Mich., in experiments in cutting, milling-energy and fluids on various materials. Based on the tests and previous data, it was concluded that theoretically the coarse-tooth cutter is more satisfactory when milling up, keeping the linear feed per foot constant. Milling down, however, the fine-tooth cutter removes a chip of greater average thickness than the coarse-tooth cutter and may be considered more efficient from a power standpoint.

Discussion of this paper, however, stressed the point that these tests, with apparatus used, are not generally applicable to actual milling conditions, therefore making them approximate as to actual production operations. In cutting, a rapid increase in energy is noted as a requirement with the increasing dullness of the cutter, more in comparison than in planing and drilling with a dull tool.

Many most promising young engineers shun the board in the machine-design or drafting rooms. Finding themselves there, they too often are influenced with the view of working out of the department as soon as possible. Presenting a paper on machine-design management, J. L. Alden, Western Electric Co., Chicago, outlined design-management practices by which a complete record of the work and personnel is kept, this system being flexible and efficient.

Executives should point out the opportunities for advancement through drafting or design departments, the importance of designers knowing shop practices, not only of their own plant, but also in the shops producing products on which machines will operate, said Mr. Alden. The matter of compensation was suggested as the reason some looked with disfavor on this branch. This was refuted by others who stated that salaries for designers in plants which compare favorably with other branches, still result in the adverse attitude toward the design department and that many leaders in that branch became vice presidents and holders of higher positions.

Close co-operation between design and foundry was stressed in a paper on correlation of casting design and foundry practice by Alex Taub, research engineer, Chevrolet Motor Co., Detroit. Individual foundry practices must be borne in mind, such practices differing almost to the extent of the number of foundries, steel, gray iron, brass and others. New foundry ideas should be imparted to designers, also new mechanical equipment, since these have an important effect on foundry practice and will also have an important bearing on patterns and casting design.

Research Aims for Better Knowledge Of Lubrication Principles

BY PRACTICE, experience or theory, no criterion of bearing safety yet has been derived, but Albert Kingsbury, Kingsbury Machine Works Inc., Philadelphia, in a paper on optimum conditions in journal bearings, discussing the most important results obtainable from the hydrodynamic theory of oil film, gave valuable data. While bearings under laboratory conditions may be operated with speeds and loads far exceeding those applicable in practice; the latter remain, and probably must always remain, matters of judgment and experience. Nevertheless the mathematical theory offers valuable aid for attaining satisfactory results in practice.

Under proper conditions of operation the load applied to a journal bearing is supported by the hydrostatic pressures built up in a film of lubricant wedged between and completely separating the journal and bearing. A paper by S. A. McKee and T. R. McKee described an investigation at the bureau of standards, Washington, the purpose of which was to determine the distribution of pressure in the oil film of a full journal bearing for various conditions of operation and of bearing construction.

Characteristics Are Noted

A specially designed apparatus provided a means for measuring the film pressures at practically all points on the surface of a bearing when operating under different conditions of load, speed, and viscosity of the lubricant. The results of nine tests made under conditions involving changes in clearance, load, speed and viscosity were presented graphically. Characteristics of the film-pressure distribution were summarized, and further steps toward a better understanding of the pressure distribution outlined.

Application of modern lubricating methods to rolling mill equipment was discussed by Joseph A. Merrill, Chicago, and Edwin M. May, New York, both affiliated with S. F. Bowser Co., who pointed out the increase in size, speed and capacity of rolling mill equipment necessitated the use of heavier oils. A modern heavy oil circulating system was described, and common practice in the selection of oils for various types of equipment indicated. By use of proper lubricating materials and their proper application, costs of lubricants can be reduced as much as 80 per cent, it was declared.

Oil Conditioning Essential

High-carbon, heat treated gears that have been properly machined and aligned, it was stated, show little or no wear over long periods when lubricated by force-feed with a clean and cool oil of suitable character. Proper oil conditioning and oil application systems provide maximum safety and protection against involuntary shutdowns, it was concluded.

That oil for modern oil circulating systems should allow ample circulation over a wide range of temperatures should have stability, and should maintain an adequate lubricating film under heavy loads, was the contention of C. M. Larson, supervising engineer, Sinclair Refining Co., New York. He discussed the essentials and oils having the necessary characteristics.

Results obtained from the use of the navy endurance test in evaluating stability for oils have been so satisfactory, he declared, that there is a growing conviction that this test is more reliable than any single service test in indicating the quality of an oil.

A steamship, BRITISH EXPORTER, first of a fleet of three, will sail shortly from England for the West Indies, Central and South America with 500 exhibits of British manufacturers and 230 selling agents. A year will be spent in this trade tour.

Taps 1730 Open-Hearth Heats In Three Campaigns

RESULTS obtained on a Stevens-type open-hearth furnace since its installation in the St. Louis district, May 11, 1929, using oil as fuel and all cold charges, created considerable interest at the second session of the fourteenth semiannual open-hearth committee conference of the American Institute of Mining and Metallurgical Engineers in Detroit Nov. 23-24.

In the first campaign, the furnace front wall was renewed, the roof repaired along the skewback after 304 heats. The furnace continued to run 536 heats and then was shut down for general repairs because of a red spot in the downtake caused by bridgewall failure.

During the second campaign, the furnace was rebuilt from the floor up. The front wall was renewed and the roof repaired after 312 heats. The furnace continued to operate 534 heats and then was taken off on account of failure at the roof.

For the third campaign, the furnace was rebuilt from the floor level and resumed operations. After 400 heats it was necessary to renew the front wall, end seals and replace the monkey walls. The furnace has continued to run to the present time without repairs and without roof repairs for a total of 657 heats. A representative monthly run shows 60 turns, 66 heats, 6629 tons produced, 9.21 tons per hour, 24.3 gallons oil per ton and 92 per cent yield. To date, 1730 heats have been produced on an average fuel consumption of 27.3 gallons oil per ton.

In discussing open-hearth combustion control, one operator pointed out that with clean gaseous fuels, a uniform fuel rate can be obtained by maintaining uniform pressure in the gas header. With fuel oil and tar, he explained, the fuel rate is likely to vary with the temperature and viscosity of oil, oil pressure, sludge in the regulating valves, and coke in the burner nozzle.

Human Element Essential

Final control of the fuel supply to the furnace must be in the hands of the first helper, he emphasized, since no equipment is available for dependable day-by-day measurement of temperatures in different parts of the furnace and no machine can exercise the judgment necessary to determine the fuel requirements at different stages of operation. Automatic control is only valuable, he continued, as a tool to assist the first helper in maintaining conditions he wants and as a means of balancing various factors involved in order to obtain these conditions as efficiently as possible.

Automatic combustion control now is installed or being installed on more than 50 open-hearth furnaces. Results from some of the earlier installations, the speaker pointed out, indicate that the following may be expected: 5 to 10 per cent increase in production, 5 to 25 per cent decrease in fuel, up to 20 per cent increase in furnace life, up to 2 per cent increase in yield of steel, and from 0.15 to 0.30 cents per ton decrease in operating costs.

In describing briefly the electrically-operated equipment used in the system of metered combustion control, a speaker cited that accuracy and sensitivity of control response, flexibility of operation and adjustment, and a simple convenient means of adding fuel, as some of the advantages. Where proper selection and installation of electrical equipment is made, no question of cost of operation, maintenance and reliability of equipment exists, he stated.

Results encountered in the manufacture of high-carbon steels were explained by Dr. C. H. Herty Jr., bureau of mines, Pittsburgh, who pointed out that the procedure is similar to that used in making low-carbon grades. By the use of manganese-silicon alloys as the deoxidizer, chipping costs on two to five grades of steel made at a Pittsburgh plant, he explained, were reduced materially.

Affects Chipping Costs

Citing tests made on high-carbon axle heats, Dr. Herty stated that chipping costs of steels ranging from 0.07 to 0.12 per cent silicon were much lower than steel of 0.15 to 0.22 per cent silicon. He mentioned that the deader the steel is killed and the denser, the higher the chipping cost for a given heating temperature. By increasing the heating temperature of denser steels, chipping costs were reduced materially.

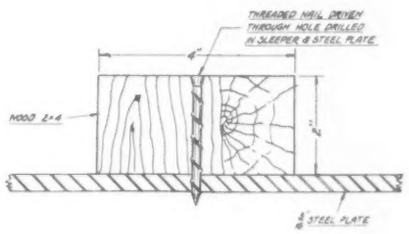
Since Dr. Herty's report of a year ago, about 56 heats of high and low-carbon steels have been deoxidized with silico-spiegel and he explained that the heats appeared to be consistently cleaner when proper deoxidizing methods are employed.

In speaking on "Growing Use of Alloy Steel Ingots and Castings," a producer mentioned that in 1928 approximately one-seventh of all steel castings produced in this country was alloy steel. Today a better grade of common steel is made than was made before alloy steel competition, he stated. That the tendency is toward stronger steels for use in locomotives is shown by a recently submitted specification which called for 90,000 pounds per square inch tensile strength, 60,000 pounds per square inch yield point, 25 per cent elongation and 50 per cent reduction of area as minima.

A tabulated report submitted by Dr. Herty and showing the results of alloy contamination of open-hearth steel at 12 plants in this country disclosed that the quantity of tin in open-hearth scrap charge during March to July, 1930, was 0.007 per cent and that charge during a similar period in 1931 was 0.015 per cent. The copper content remained about the same. Plants which showed a large quantity of tin also showed a large amount of copper. Dr. Herty emphasized that an investigation should be undertaken immediately in an effort to learn the effect of these two contaminating elements.

Wood Sleepers Nailed to Battledeck Floor

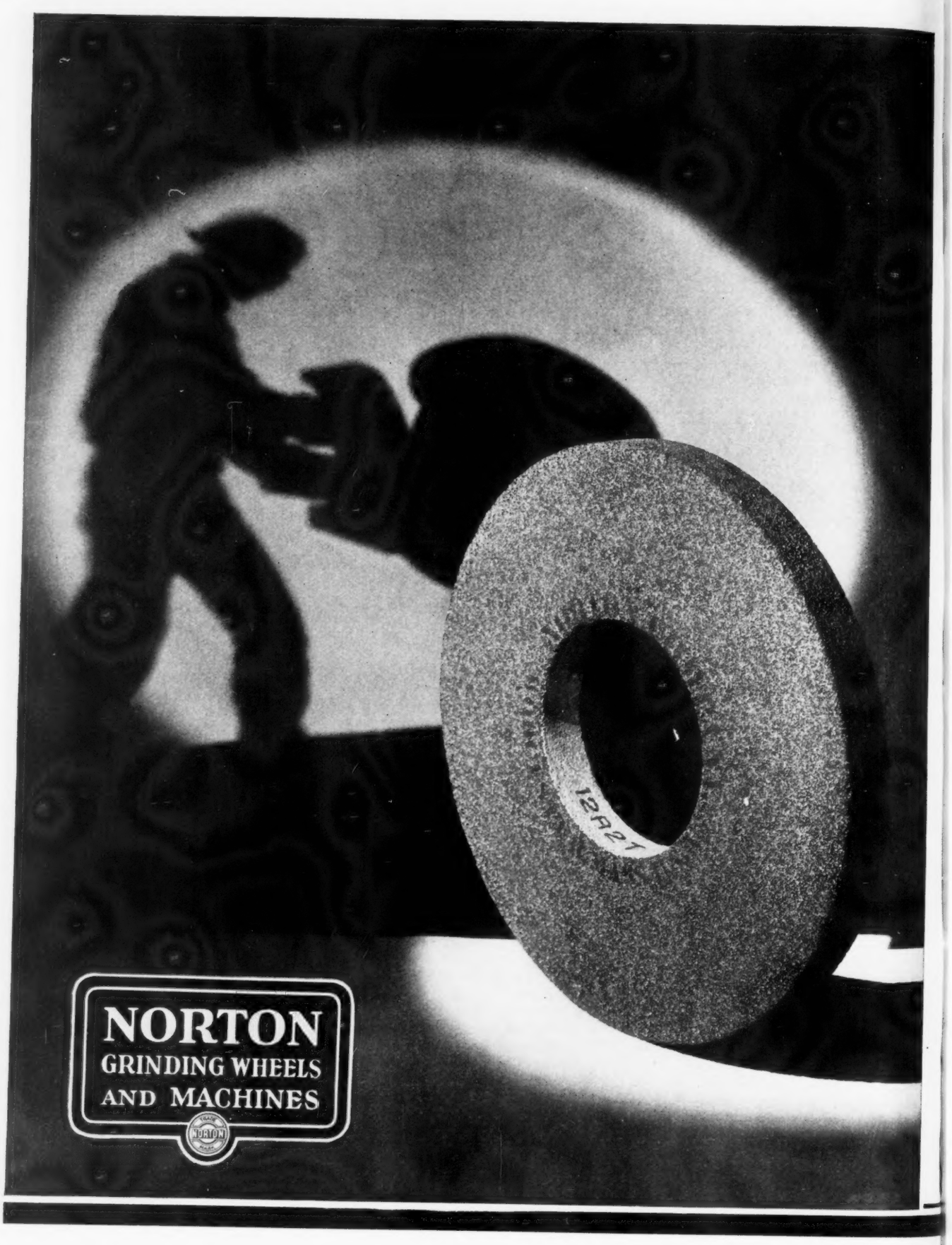
An innovation in affixing wood sleepers to battledeck steel floors recently has received favorable comment. Wood 2 x 4's are laid on the steel plates and drilled. The drill passes through the wood and the plate. A patented type of screw-nail, manufactured by the Hill Wood Mfg. Co., Cleveland, then is driven through the sleeper, threading itself

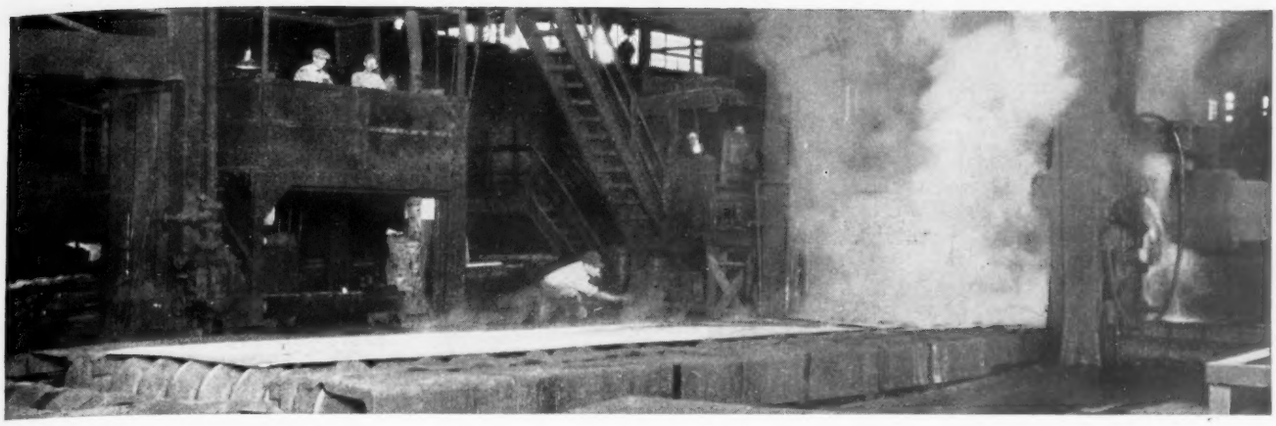


into the steel as it is driven. The setup is shown in the accompanying sketch.

Tests to remove the nails by wedges under the sleeper resulted in tearing off the wood without bending or starting the nail. The use of wood sleepers in connection with steel under-flooring not only allows wood finish flooring but, in residence building, which is now turning to steel frame construction, provides a floor construction which offers the minimum of obstruction to pipes, etc.

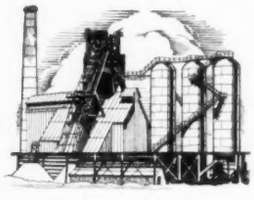
A demonstration of this method of attaching wood sleepers was held this summer in Cleveland, and was summarized in a brief article on Page 24 of the July 30 issue of STEEL.


NORTON
GRINDING WHEELS
AND MACHINES
NORTON
12R27



PROGRESS IN STEELMAKING

AT A STEELWORKS in the Chicago district the windings of all lifting magnets used throughout the plant are vacuum impregnated with asphaltic gum heated to 175 degrees Cent. By this treatment the heat from the windings is conducted to the frame of the magnet, thus preventing drying and pulverization of the insulation during operation, and increasing the life of the magnets.



A 20 PER CENT saving in coke consumption has been realized at a western blast furnace by crushing the ore to pass through a 2-inch mesh and dividing it into three different sizes and charging each size separately. By this arranagement a more uniform size distribution throughout the furnace is effected.

♦ ♦ ♦

By installing the heating furnaces at the rear of large hammers at a forge shop in the Cleveland district and locating the furnaces serving the smaller type units at the side, heat losses of the bar while being transferred from the furnaces to the dies and the fatigue of the hammermen are greatly minimized.

♦ ♦ ♦

Maintenance of open-hearth furnace checkers at about 2100 degrees Fahr. minimizes the need for cleaning, according to the practice of one open-hearth operator.

♦ ♦ ♦

Handling high-grade sheets during processing at the finishing end of the mill without scratching their surface often has been a source of trouble to sheet mill foremen. A recently developed conveyor with wheels having an outside fiber tire, however, is used by one sheetmaker to prevent marred surfaces of sheets while in transit from one stage of processing to another. The tire upon which the load rides acts as a cushion. Each wheel has a continuous load rating of 50 pounds.

♦ ♦ ♦

Maintaining the proper relation of manganese and silicon to carbon content of straight carbon steel produces a steel free from any tendency toward soft spots when casehardened, according to a producer of cold-drawn steel. Exceptional physical qualities are obtained when the chemical specifications are 0.10 to 0.20 carbon, 0.60 to 0.90 manganese, 0.04 maximum phosphorus, 0.05 maximum sulphur, and 0.20 to 0.30 per cent silicon. Tests disclose that manganese and silicon in these proportions afford a dense homogeneous steel which responds readily to casehardening.

A STEELMAKER using tilting open-hearth furnaces finds the best metal charge for this type of unit to be 35 per cent and the maximum for satisfactory production about 42 per cent.

♦ ♦ ♦

A rotary shear recently installed for trimming wide hot strip not only trims the desired amount of scrap from the strip but delivers it over chutes into rotary shears where it is cut into convenient lengths for remelting in open-hearth furnaces. The unit is provided with a sliding traverse adjustment for various widths of stock, parallel vertical adjustment of upper knife arbors, horizontal setscrew adjustment to regulate center line relation of upper to lower knife arbors, and a spanner collar adjustment to compensate for wear of knives.

♦ ♦ ♦

Considerable floor space was saved at a new cold strip mill by interposing the motor between the reduction gear set and the roll stand.

AT A TIN mill in the Pittsburgh district the baling of hot mill shearings has been speeded up by increasing the return stroke of the horizontal ram. An air-operated discharge valve permits the hydraulic fluid to return through a large diameter pipe to the storage tank instead of flowing through the control valves or pump. This arrangement allows the counterweights to effect a quick return of the horizontal ram to its starting position and effects an increase in the number of press loadings per turn.

♦ ♦ ♦

Cleaning iron ore out of the corners in the holds of ore boats operated by a Cleveland vessel owner is accomplished by the use of a gasoline tractor equipped with a bulldozing attachment. On account of easy maneuvering the tractor affords a rapid means of removing the ore in the corners, scraping the sides and bottom and piling the ore within reach of the clam shell of the unloader. Ships thus are released much quicker than under the conventional method of hand piling.

IN A STEEL MANUFACTURER'S OWN COOPERAGE SHOP: In this instance, the steelmaker rolls the strip, makes the hoops, fabricates the barrels and uses them for shipping other steel products. After being riveted the hoops are expanded to exact size, on the machine

Large Uses of Steel In Small Ways

206th Article ◆ Barrel Hoops

STEEL consumed in the manufacture of barrels and hoops in the United States, 200,000 tons annually, is well up toward some of the major consuming groups. As for example, the amount of finished steel used in the building of ships in 1930 was 308,500 tons; in highways and highway bridges, 395,370 tons; and in the mining and lumbering industry, 178,000 tons. These were the figures reported by producers to STEEL, for the annual survey, published Jan. 1, 1931.

Barrel Production Leaps

Production of steel barrels has increased considerably in recent years; for 1925, when the subject was covered in this series of articles, the output was 6,000,000. In 1929 the number was 8,338,000, and in 1930, 7,436,000. For the manufacture of these 15,774,000 barrels in 1929 and 1930 the consumption of steel averaged approximately 157,000 tons annually.

But important as has been the growth of the steel barrel industry, the output of wooden barrels far exceeds those made of steel. Not all of these wooden barrels are bound with steel hoops, but for those which are, leading manufacturers estimate, 50,000 tons is necessary.

This consumption for hoops is divided into 40,000 tons for the flat and beaded bands, and 10,000 tons for wire, the wire hoops being used frequently for binding the middle portion of so-called slack barrels. These slack barrels are used for shipping such products as sugar, salt, flour, cement, apples, potatoes, nails, nuts, bolts and rivets. Beaded hoops generally are used around the ends of the slack barrels. Tight barrels, which are water-tight, are bound with flat steel hoops.

The majority of hoopmakers use a hot-rolled strip steel of special analysis. Sizes have been well standardized for years, the hoops for tight barrels being ¾-inch to 1¾ inches wide; and the gages, No. 20 to No. 16. Beaded hoops are 1¼ to 1⅝ inches wide, and No. 20 to 23 gage.

Comparatively little fabricating is done by the steel manufacturer who rolls the material for shipment to cooperage shops. The thin gage steel used for slack barrels must be reinforced, so the edge is rolled over, giving the strip a "bead." The manufacturer also frequently punches the holes for nails or rivets; and he ships the material either in coils, or flat, cut to specified lengths.

The steel does not become a hoop until it enters the cooperage shop, be that 500 miles away or 500 feet, as occasionally is the case, in the steelmaker's own cooperage shop, where he fabricates barrels for shipping other products.

Some steelmakers have developed special machinery for rolling, beading and punching hoop material on a mass-production basis. And special machinery also has been devised for converting the strips into hoops. Wire is bound around barrels, and tightened by machines.

Designer Needs Definite Data on Materials

In speaking recently before the Hartford, Conn., chapter of the American Society for Steel Treating on the subject of physical properties of steel relative to design, A. L. DeLeeuw, consulting engineer, Plainfield, N. J., urged closer co-operation between designing engineer and metallurgist to gain fully the advantages of metallurgical improvements.

First efforts, he said, should be along the line of improved terminology. Machinability, for example, may refer to power required to remove chips, pressure of tools, heat developed at the tool edge, tool life, finish or other characteristics. Further, hardness numbers do not offer direct relationships, that is, a 400 brinell is not double a 200 brinell.

Mr. DeLeeuw pointed to the lack of metallurgical data on new materials, data which the designer needs. To determine the applicability of a new material, the designer must take the static tensile properties given by the manufacturer and by means of empirical formulas which may not be accurate for the material, perform numerous calculations to convert the data to the required form.

Many steel compositions are available, but the designer is given little to guide him in making the proper selection for his particular application. Instead of claims of superiority for certain alloys, he needs definite information to enable him to select the proper ones.

Installs Car-Bottom Furnace

St. Louis Steel Castings Co., St. Louis, is installing a new type of annealing furnace for heat treating steel castings. The furnace is of the car-bottom design, in which the castings are placed on a flat car by means of a crane, the car then being pushed into the furnace, forming a sealed bottom that prevents escape of heat.

Gas burners supply heat uniformly to top and bottom of the load. The equipment is such that results can be duplicated from day to day, insuring uniformity of products on any desired specifications. Design and installation of the furnace were handled by Surface Combustion Corp., Toledo, O., in co-operation with the Laclede Gas Light Co.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Spring Failures

Inclusions as the cause of the majority of valve spring wire failures, by Frank Stones of the Eaton Spring Corp., in Iron Age, Nov. 12, 1931, p. 1234, 4 pp., 7 illusts.

Ninety per cent of the failures of correctly heat-treated springs investigated by the author have been due to the presence of nonmetallic inclusions located near some highly stressed area. Available knowledge regarding composition and metallographic identification of nonmetallic inclusions is far from complete. There seem to be at least five principal impurities in commercial steel: Sulphides of iron and manganese, silicates of iron and manganese, and oxides of iron.

Inclusions principally are the products of the reaction of the oxygen and impurities in the unfinished steel, and of the deoxidizers such as manganese and silicon. Furthermore, small pieces of furnace linings, ladle linings, washings from the nozzle, dirt in ingot molds, and oxidation by air during teeming, are other sources of inclusions which, owing to their lack of buoyancy, have insufficient time to rise to the surface of the metal and are entrapped by the freezing crystals of the ingot, or collect in the slower cooling portions, giving rise to "ghosts."

The importance of surface decarburization to the life of a spring cannot be overestimated. The effect of this is to lower the endurance limit of the skin of the wire where it is most highly stressed to about half of what it should be.

—STEEL, 12-7-31

Combination Turret Lathe

The Alfred Herbert 33-inch combination turret lathe, described in Engineering (England), Oct. 16, 1931, p. 48. 3 pp., 4 illusts.

The production engineer, in his search for economical methods of manufacture, probably has considerable influence on the development of machine tools, particularly as regards size and capacity. A case in point arises in the new combination turret lathe just produced by Alfred Herbert Ltd., Coventry, England. This type of machine has long been recognized as being eminently suitable for dealing with heavy chuck work such as diesel engine cylinder liners, but, due to the increase in size and weight of such components, a demand has arisen for machines of greater power and capacity.

To meet this demand the Herbert organization decided to build a much larger and heavier combination turret lathe than hitherto constructed. Dimensions are: Maximum swing over way covers, 33 inches; maximum swing over cross slide, 21 inches; diameter of hole in spindle, 7¼ inches; and maximum distance from flange of spindle to turret face, 115 inches. These are, however, not the limits of the design as it has proved to be so rigid in operation that the company prepared to build similar machines with raised centers so that the swing over the slide covers would be 40 inches and that over the cross slide 28 inches. Power and stability of the machine make it suitable for use with tungsten carbide and other high-speed cutting alloys, it is said.

—STEEL, 12-7-31

Tungsten Carbide Dies

Plant equipment required for mills which purchase rough nibs and do their own finishing of carbide dies, outlined in Wire & Wire Products, November, 1931, p. 435, 3 pp., 4 illusts.

Making of the raw nib, mounting the raw nib in a casing and finishing into a completed die of the rough nib mounted in a casing are discussed in detail. Simple methods of manufacture are used on standard equipment throughout the manufacturing process thereby reducing investment and eliminating personal skill as a determining factor in the finished product. The flexibility of the method of producing raw nibs makes available nibs of superior quality with a minimum amount of stock to be removed in finishing into a completed die.

—STEEL, 12-7-31

Building Budgets

Building budgets for incentives and standard costs, by R. E. Case, in Factory and Industrial Management, November, 1931, p. 650, 3 pp., 1 table, 1 illust.

If a budget is good enough to serve as a basis for standard costs, why is not the same budget good enough to serve as a basis for the foreman's bonus? Why carry on a double set of accounts when one set should answer the purposes of both costs and bonus? The answer is that many items must be included in costs which are beyond the control of the foreman and therefore should not be the basis of a bonus payment or a bonus penalty. But the fact remains that a definite tie of the bonus budgets to the general books is highly desirable. In the comptroller's eyes such a tie, which will show not merely where but why a company's funds are drawn upon for bonus payments, is an absolute necessity, according to the author.

—STEEL, 12-7-31

Steel Castings

Some metallurgical points on acid open-hearth and electric steel for castings, by F. A. Melmoth, Transactions and Bulletin of the American Foundrymen's association, p. 458, 25 pp., 11 illusts., 5 tables.

Can two steels of equivalent chemical composition, but made by differing processes, possess varied physical characteristics and behavior? This paper suggests lines of thought along which such probabilities may be studied, and gives preliminary data resulting from such an inquiry. The possibility is advanced of considerable further improvement in steel castings, by means of detailed study of steelmaking, and some interesting suggestions are made on the subject of the influence of nonmetallics.

The physical properties displayed by steel castings in conditions of varied heat treatment are indications of the importance and increasing significance of this operation. Engineering demand is imposing upon the steel founder an ever increasing necessity for higher standards of performance. The paper adds emphasis to statements previously made that a step into the alloy field may be regarded as an unjustifiable expense, until such time as the properties latent in high quality plain carbon steel are made fully available by scientific manufacture and after treatment.

—STEEL, 12-7-31

Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Surface Quality Standards Are Needed By the Metalworking Industry

DEVELOPMENT of interchangeable manufacturing has been marked by a number of standardization projects, the carrying out of which in each case has been of deep industrial significance. Examples of such projects are: Adoption of a standard and accurate system of measurement; adoption of a standard system of screw threads; and development of a standard system of metal-to-metal fits.

The metalworking industry now is showing unmistakable signs of needing still another system of standards—that of machining finishes. Several noteworthy plans have been put forward by experienced authorities. The American Society of Mechanical Engineers has offered to sponsor this project and as a result the American Standards association has appointed a special committee to consider the request and to make recomendations to the association's standards council.

Just as metal fits were standardized in certain progressive machine shops long before any system was adopted nationally, so also have machining finishes been standardized locally. That is all right as far as it goes, but in these days when there is an increasing amount of decentralization in the manufacture of component parts of interchangeable mechanisms, local standards are becoming more and more inadequate.

Definite Blueprint Instructions

A universally understood standard grading of machining finishes will accomplish a number of things. In the first place, it will make it possible for the blueprint to tell the whole story. In other words, discussion of finish will begin and end in the engineering department, and the blueprint will carry definite information as to grade of finish of every surface—expressed by a simple system of symbols.

Blueprints carrying these symbols will preclude inefficient production due to the use of unnecessarily high grade finish, and inefficient assembly due to inadequate finish in other cases. These two forms of inefficiency are particularly prevalent in work which is "farmed out" from one plant to another, as in the case of many automotive parts.

Major operations to which classified finishes will apply are: Turning; boring; thread cutting; grinding; planing; side milling; face milling; drilling and reaming; keyway cutting; polishing; and lapping. In most cases three degrees of finish will meet manufacturing requirements. For instance, in the case of turning No. 1 might indicate high finish for journals, etc.; No. 2, commercial finish, for press fits, bolts, etc.; and No. 3, rough finish simply to remove stock or establish balance.

"Finish Comparator" Sought

The real task of any committee which may be entrusted by American Standards association with the working out of this standardization problem will not be to decide upon proper classification of machining finish, or to develop symbols by which degree of finish can be set forth upon blueprints. It will be to find some relatively simple and universally applicable system for measuring accurately the grade of finish.

Practical "finish comparators" have been suggested by R. E. W. Harrison, engineering director, Cincinnati Grinders Inc., by Dr. C. B. Sawyer, president, Brush Laboratories Co., Cleveland, by R. C. Deale, management engineer, Stevenson, Jordan & Harrison, New York, and by John Gaillard, mechanical engineer, American Standards association, and by others.

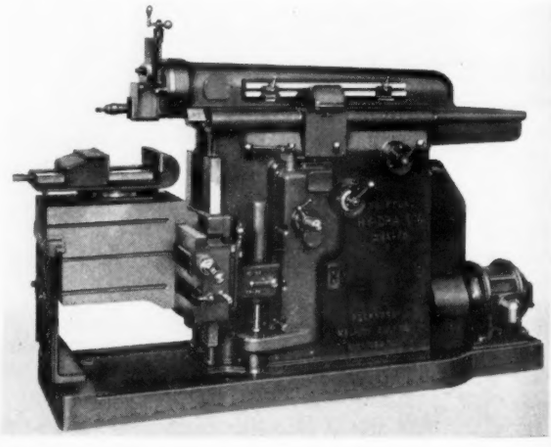
It is evident that in the development of this comparator, pure science—as exemplified by the physics laboratory—again is destined to make a vital contribution to modern machine shop practice.

◆

Shaper Features Hydraulic Drive and Control

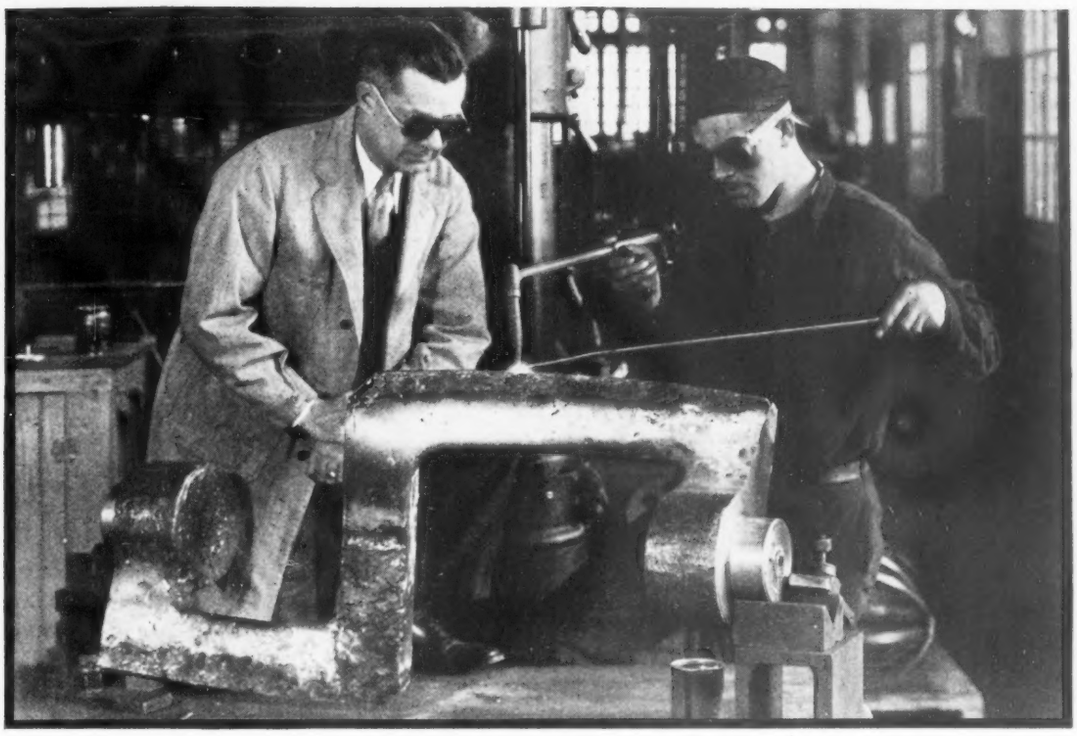
Rockford Machine Tool Co., Rockford, Ill., recently announced the development of a hydraulic shaper, one of the first on the market having a hydraulically driven ram and hydraulic feed. Advantages claimed for the machine include constant tool pressure throughout the cutting stroke, simplified stroke control, constant ram speed as selected for all stroke lengths, automatic stop for feed and rapid transverse of the table.

The number of feeds possible with



HYDRAULIC shaper built by Rockford Machine Tool Co. operates at any number of ram strokes up to 150 per minute. In addition to simplified stroke control, other features include automatic stop for the feed and rapid transverse of the table

Haynes Stellite Engineering Service



Have You Taken Advantage of It?

A MANUFACTURER of special machinery for mixing highly abrasive powdered minerals in concentrated sulphuric acid at 400 deg. F., required mixing arms which would last much longer than cast steel arms.

This manufacturer consulted Haynes Stellite engineers, who demonstrated how Haynes Stellite's high resistance to chemical corrosion and its ability to resist abrasion, even at a red heat, made it an ideal protective material.

Convinced, he Haynes Stellited the cast steel arms and increased their service life eight times.

Longer life in any part of your product means sales. If you have similar problems, take advantage of Haynes Stellite Engineering Service and learn how Haynes Stellite can be adapted to your needs. This service is nation-wide and brings to your plant the experience of the pioneer manufacturers of hard facing alloys. Write today for complete information.

Make this red-hardness test yourself

Haynes Stellite a steel coupon . . . Place a ¼-in. ball-bearing between the Haynes Stellited face and the face of a plain steel coupon . . . Squeeze tightly in a vise . . . The ball indents each surface slightly . . . Now heat the coupons red-hot and repeat . . . The Haynes Stellited surface retains its original hardness even at red heat.

HAYNES STELLITE TRADE MARK

A red-hard, wear-resisting alloy of Chromium Cobalt and Tungsten

HAYNES STELLITE COMPANY

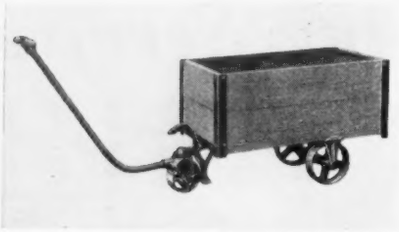
Unit of Union Carbide and Carbon Corporation

UCC

Chicago · Cleveland · Detroit · Houston · Los Angeles · New York · San Francisco · Tulsa

General Office and Works—Kokomo, Indiana

Haynes Stellite alloys are available also at all of the 42 apparatus shipping points of The Linde Air Products Company



Truck for industrial use developed by Howe Chain Co.

this new unit is unlimited up to the maximum of 0.160 inch. Any feed whatever below the maximum can be selected instantly. The conveniently located feed selector knob resembles a micrometer thimble. Feed cannot start until the tool has cleared the work on the return stroke and it takes place so rapidly that it is practically instantaneous. This can be accomplished because the hydraulic drive for the feed is absolutely without shock and the operation of the feed also is independent of the ram drive.

Stroke Controlled Hydraulically

Extreme simplicity and convenience of hydraulic stroke control have been incorporated in the new shaper, a view of which is shown in the illustration on page 50. A pair of dogs governs both the stroke length and its position relative to the work. Conveniently mounted in a T-slot, their work is light and they can be adjusted quickly and safely by hand while the ram is in motion. Altering the stroke length does not change the cutting speed. Another feature is the ball handle which enables the operator instantly to reverse direction of ram travel.

Oil under heavy pressure constantly drives the shaper ram to its work with vibrationless power but at the same time acts as a shock absorber when the tool starts to cut, meets a hard spot in the metal, or encounters a lump on the surface. Control is positive and the ram cannot "run away." As to specifications, the stroke, actual length, is 25 inches; minimum stroke 1 inch; strokes per minute 150; table height 17¾ inches; floor space required 4 feet by 8 feet and 3 inches; net weight approximately 6200 pounds.

◆

Wire Grades Identified by Colored Insulation

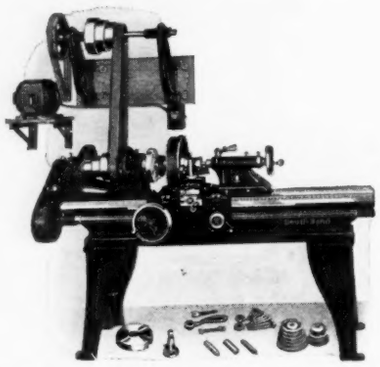
General Electric Co., Schenectady, N. Y., has adopted a method of identifying its various grades of code wire by means of colored rubber insulation. Thus architects, contractors, and building owners may have the assurance that installations are up to specifications without the need for complicated and expensive laboratory tests.

This feature is added with no increase in price. The three grades will be marked with colored rubber insulation as follows: Code, black; intermediate, red; 30 per cent, green.

◆

Oil Pressure Feed Applied To Drilling and Boring

Baker Bros. Inc., Toledo, O., recently announced the development of a drilling and boring machine incorporating a hydraulic feed. The unit as designed is adapted for either single spindle drilling or boring, similar to that shown in the illustration on page 54, or for use in connection with indexing table for successive operations on the same piece. The particular set up shown in the illustration is for drilling an automobile cluster gear.



General purpose lathe designed by South Bend Lathe Works

The saddle which carries the head mounting slides on scraped ways and is actuated by a cylinder mounted on each side and working in unison. A motor drives the spindle through V-belts, the drive bracket carrying four gears. Two of these gears are of the slip change spur type which may readily be changed to provide different speeds. Speed changes available from the combination of gears that can be obtained, range from a minimum of 46 revolutions per minute which represents a 60-foot cutting speed on a 5-inch diameter, up to 836 revolutions which represents a cutting speed of 70 feet on a 5/16-inch diameter.

Feed of the machine is actuated by a constant delivery pump mounted in the main frame and driven by an independent motor. The cycle of operation is automatic, the operator stepping on the foot treadle which operates the control valve, the spindle, moving down at a rapid transverse of 120 inches per minute, trips into feed at any predetermined point, drills to depth and then automatically returns to the upper position. The rate of feed can be changed instantly by means of a metering control box mounted in a convenient position on the side of the machine. All drive belts and moving parts are amply guarded.

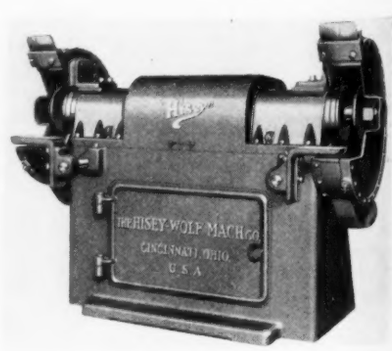
◆

New General Purpose Lathe Has 16-Inch Swing

South Bend Lathe Works, 426 East Madison street, South Bend, Ind., recently added to its junior line a new general purpose lathe designed especially for light manufacturing, general machine shop and for maintenance shop work. This new unit has a 16-inch swing which permits the handling of large diameter work.

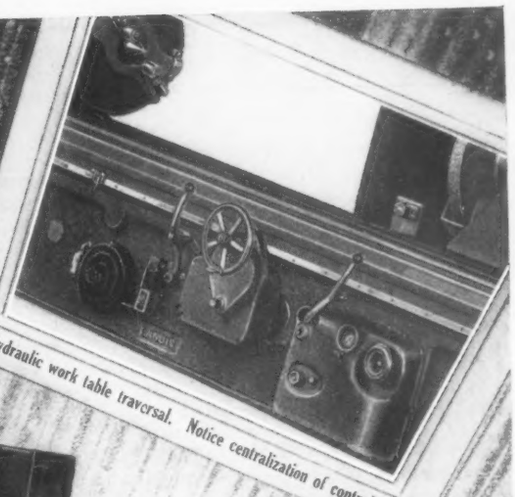
As the lathe is available in bed lengths of from 6 to 12 feet, this unit also will handle work of unusual length. Simplification in construction and design are features of the new lathe, a view of which is shown in the accompanying illustration. It is a back-geared, screw cutting lathe with automatic longitudinal feed and eight changes of spindle speed. All standard screw threads may be cut from 2 to 40 per inch, right or left hand, including 11½ pipe thread. The headstock spindle is made of special carbon steel, finish ground, with a 1⅜-inch hole through its entire length.

Bearings are of phosphor bronze and adjustable for wear. The tailstock has a set-over for taper turning, graduated spindle, improved binding plugs and hardened center. Compound rest will swivel to any angle and has an angular travel of 3¾ inches. This lathe may be had

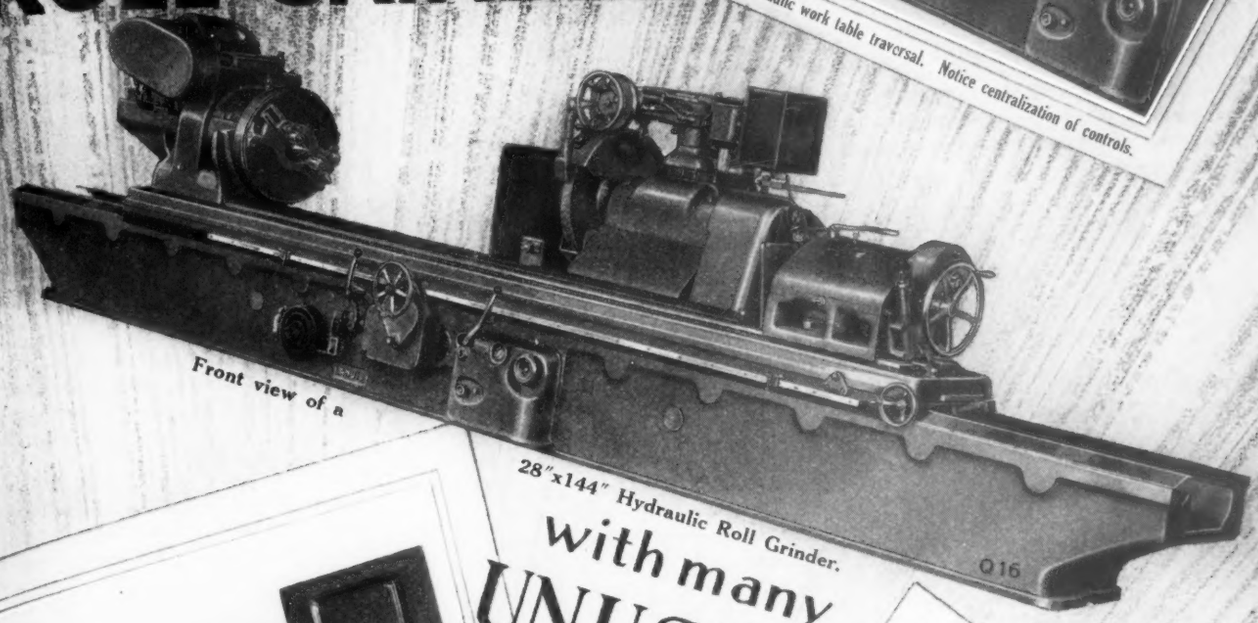


Heavy duty snagging grinder built by Hisey-Wolf Machine Co.

LANDIS ROLL GRINDER

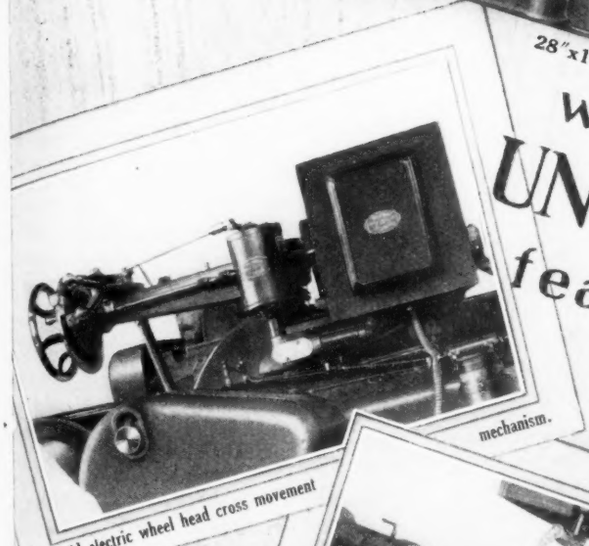


Hydraulic work table traversal. Notice centralization of controls.

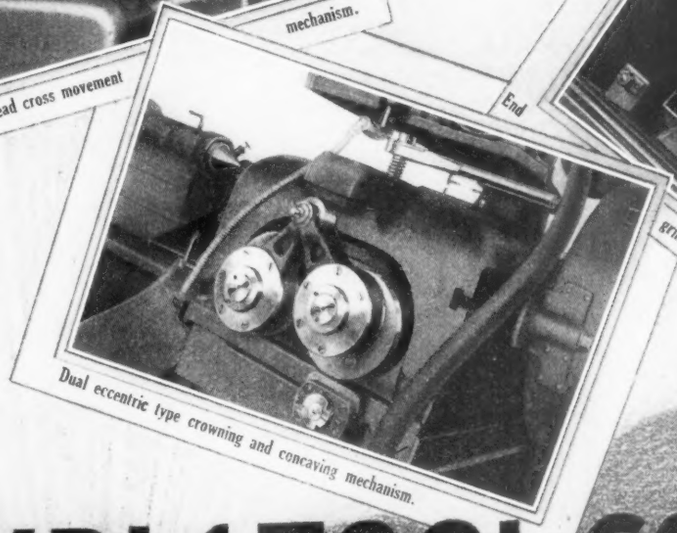


Front view of a 28"x144" Hydraulic Roll Grinder. Q16

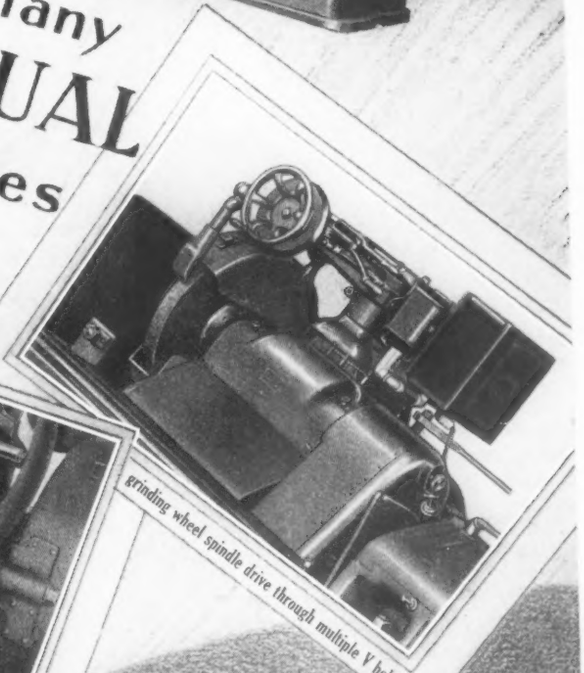
with many UNUSUAL features



Rapid electric wheel head cross movement mechanism.



Dual eccentric type crowning and concaving mechanism.



End grinding wheel spindle drive through multiple V belts.

LANDIS TOOL COMPANY

WAYNESBORO = PA.

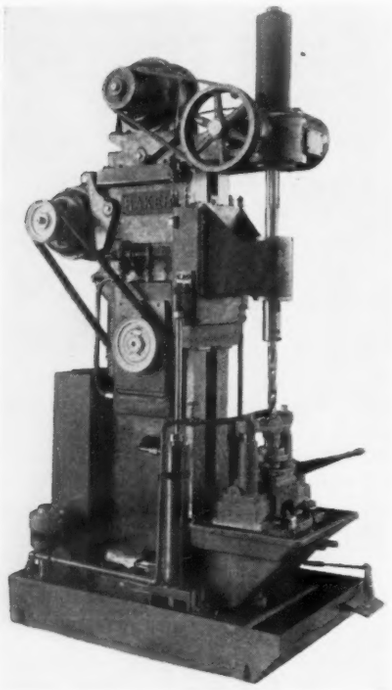
DETROIT CHICAGO NEWARK PHILADELPHIA

in countershaft drive or in various types of motor drive to fit the needs of any shop. Safety, economy and convenience of operation are features pointed out by the manufacturers of the machines.

◆

Hot Solvent Process Used In Cleaning Machine

Rex Products & Mfg. Co., 13005 Hillview avenue, Detroit, recently developed a new machine and material for



Drilling and boring machine developed by Baker Bros. Inc.

the cleaning of metals and alloys. This hot solvent process employs a specially prepared cleaning liquid and is used in connection with the equipment shown in the accompanying illustration.

Solvent Applied by Pressure

Work is placed on a conveyor and enters the machine in a compartment where it is drenched with a heavy fog of the solvent which loosens the foreign material and prepares the work for a stream of boiling slovent, pumped at 35 pounds pressure. Dirt and oil are removed from the work which passes along the conveyor and is rinsed in a bath of distilled hot solvent. Following this operation the metal pieces leave the machine clean and dry.

The cleaning liquid can be used over and over. According to the manufacturers the total amount of solvent in the machine may be distilled in less than an hour and the accumulated oil, dirt and other foreign matter removed. This method eliminates all hand wiping, blow-offs, driers, etc., leaving no residue on the surface of the metal to slow up or interfere with subsequent operations such as pickling, plating, enameling, vitreous enameling or rust-proofing.

The process is being recommended by the manufacturers particularly for removing heavy lubricating oils from machined, stamped, or quenched parts; preparing metals for plating enameling, painting, laquering, or other surface coating. The solvent machine may be made to fit into regular production schemes and placed at a point where the cleaning operation is needed.

◆

Grinder Has Automatic Belt Tension Adjustment

Hisey-Wolf Machine Co., Cincinnati, has developed a new heavy duty snagging grinder which affords independent speed control for each wheel. This permits the operation of both wheels at the most efficient and economic speed. This machine, a front view of which is shown in the illustration on page 52, is manufactured for 20, 24 and 30-inch grinding wheels, either high speed or vitrified with spindle speeds to correspond.

The drive is through V-belts and any stock power motor can be used. Another feature is an automatic belt tension adjustment which eliminates motor adjustment. Steel plate riveted guards with exhaust connections and bayonet-type doors are standard equipment. A steel spark arrester is held in a box-type of slide and is easily adjusted to the wear of the wheel. The spindle is chrome nickel steel which is heat treated before machining and accurately ground. Sturdy steel tool rests provide ample support. They are easily adjusted and can be quickly removed when necessary.

◆

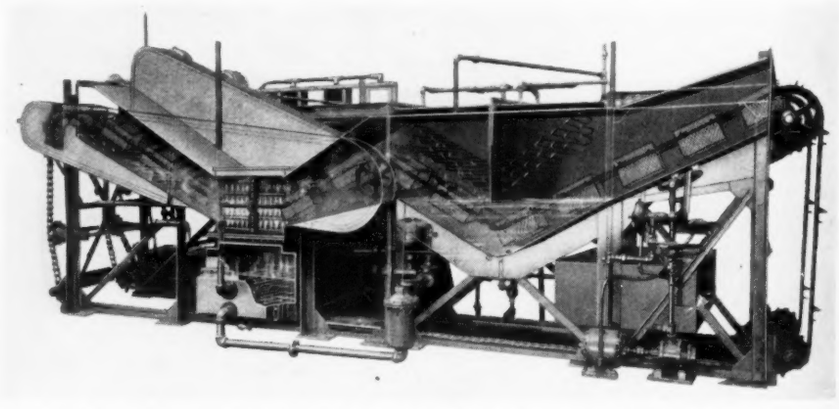
Introduces Improved Truck For Industrial Use

Howe Chain Co., 2-30 Clay avenue, Muskegon, Mich., has placed on the market an improved truck for industrial and warehouse use. It is a simply designed unit adaptetd for use as a hand truck or trailer, and for temporary storage of materials. A body of hardwood or steel, suitably shaped for the product to be handled, is permanently attached to two rear wheels, with a malleable iron leg supporting the front. This represents the storage unit, immovable, self-contained, occuplying but little more space than the materials carried.

For use as a hand truck, a jack tongue is inserted in the draw bar as shown in the illustratioin on page 52. A simple downward movement of the handle exerts a cam action and elevates the front leg 1¼ inches from the floor, transferring the load to the jack tongue wheel. The truck then can be pulled over rough floors, door sills, or soft foundry floors with a minimum of effort.

Jack Tongue Is Removed

To couple trucks in a tractor train, each unit is brought into position, the jack tongue removed, a trailer hitch inserted in its place and coupled to the clevis of the preceding truck. Permanently attached rear wheels and the handle cast integrally with the draw bar permit ready movement of empty trucks without the use of the jack tongue.



Machine for cleaning metals and alloys by hot solvent process was developed by Rex Products & Mfg. Co. Conveyor transports work

Clarifying Prices for First Quarter

Wire Products, Hot Strip Advanced; Plates, Shapes, Bars Easier
Pipe, Tin Plate, Structurals Fairly Active—Operations Year's Low

DESPITE a disinterested attitude on the first quarter of 1932 by both steel producers and consumers, which has been accentuated by a further slight easing in bookings and operations, the price situation appears to be on the road to clarification.

For the first quarter, nails have been advanced $1 a ton, wire rods $2 a ton, and new classifications adopted on wire products which introduce a straight carload price, with differentials for mixed, joint, pool and less-carloads. The general effect is to increase prices. First quarter prices on hot strip are $1 higher than current levels.

Still lacking a definite first quarter announcement, steel shapes and plates continue at their recent $2 down spread of 1.50c to 1.60c, Pittsburgh. At Chicago, bars as well as plates and shapes are sensitive to the easier situation at Pittsburgh, and all now are quoted at a range of $2 down. In sympathy, bar iron is off $1 a ton at Chicago. Concessions have been wrested on sheets at Detroit by the automotive industry, but mills are trying to localize them.

In the face of repeated postponements the steel trade continues to look to the automotive industry for major support this month. The policy of most automotive manufacturers, including Ford, is to produce a minimum of new models for show purposes and dealer stocks. Ford, scheduled to distribute a sizable tonnage of steel last Friday, is now slated to take action early this week. Buick and Chevrolet are outstanding as consumers of steel at this time.

Steelworks operations last week declined 2½ points to 26 per cent, thereby surrendering all of the early November improvement and sinking to a new low point for the year. Whether this week's rate increases rests entirely with automotive releases, which do not now augur well.

Partly due to increasing requirements and partly to seasonal anticipations, tin plate production has expanded 3 points to 48 per cent. Outstanding inquiries include 100,000 base boxes for Standard Oil of New Jersey and 70,000 for the Argentine government. The Pet Milk Co., St. Louis, has purchased 25,000 boxes.

More than 60,000 tons of pipe is pending or immediately in prospect, including 52,500 tons of 10-inch for an oil line for the Ajax Pipe Line Co., from Glenpool, Okla., to Woods River, Ill., and 10,000 tons of 20-inch for an Illinois gas line extension for the Continental Construction Corp. The Standard Oil Co. of New York and Vacuum Oil Co. are shaping up a pipe line program.

The confused railroad financial situation continues a deterrent to the issuance of 1932 rail inquiries. Active equipment inquiries include 150 hopper cars for the Great Northern and 300 underframes for the Western Fruit Express.

Structural shape awards this week will be swelled by 25,000 tons for several structures in New York. A million dollar highway project, requiring a large tonnage of steel, is to be awarded by the state of Ohio Dec. 18. Actual awards in the past week, 18,497 tons, were less than in the week preceding.

November continued the downward trend in pig iron production, with only 67 stacks active at the close of the month, two less than at the beginning; and, also, two fewer than at the lowest point in the 1921 depression. Daily average output, 36,727 gross tons, was 2.9 per cent lower than in October; and the month's total, 1,101,820 tons, was down 6 per cent. For the 11 months this year 17,282,634 tons represents a reduction of 42 per cent from 1930.

Due to the reduction in plates at Pittsburgh, STEEL's iron and steel price composite is down 8 cents to $30.47, while the finished steel composite is off 20 cents to $47.32. Scrap is steady.

Composite Market Averages

	Dec. 5	Nov. 28	One Month Ago (Nov., 1931)	Three Months Ago (Sept., 1931)	One Year Ago (Dec., 1930)	Ten Years Ago (Dec., 1921)
Iron and Steel Composite	$30.47	$30.55	$30.61	$31.03	$31.74	$33.99
Finished Steel Composite	47.82	48.02	48.17	48.72	49.30	51.30
Steelworks Scrap Composite	8.19	8.19	8.22	8.82	10.77	11.44

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. **Finished Steel Composite:**—Plates, shapes, bars, hot strip, nails, tin plate, pipe. **Steelworks Scrap Composite:**—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Dec. 5 1931	Nov. 1931	Sept. 1931	Dec. 1930
PIG IRON				
Bessemer, del. Pittsburgh	$17.76	17.76	18.26	18.76
Basic, valley	15.00	15.00	17.00	17.00
Basic, eastern del. eastern Pa.	16.00	16.00	16.65	17.50
No. 2 foundry, del. Pittsburgh	17.76	17.76	18.26	18.26
No. 2 foundry, Chicago	17.00	17.00	17.50	17.50
*Southern No. 2, Birmingham	12.00	12.00	12.00	14.00
**No. 2X, Virginia furnace	18.00	18.00	18.15	18.25
**No. 2X, Eastern del., Phila.	16.01	16.01	17.26	18.26
Malleable, valley	16.50	16.50	17.00	17.50
Malleable, Chicago	17.00	17.00	17.50	17.50
Lake Superior, charcoal, del. Chi.	23.04	25.04	25.54	27.04
Gray forge, del. Pittsburgh	17.13	17.13	17.63	17.63
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	93.29

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.35	2.35	2.40	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	29.00	29.00	29.00	30.50
Sheet bars, open-hearth, Pitts.	29.00	29.00	29.00	30.50
Billets, open-hearth, Pittsburgh	29.00	29.00	29.00	30.50
Wire rods, Pittsburgh	35.00	35.00	35.00	35.50

	Dec. 5 1931	Nov. 1931	Sept. 1931	Dec. 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.60	1.70	1.70	1.70
Steel bars, Philadelphia	1.89	1.89	1.89	1.89
Iron bars, Chicago	1.60	1.65	1.70	1.70
Shapes, Pittsburgh	1.50	1.60	1.60	1.60
Shapes, Philadelphia	1.69½	1.69½	1.76	1.76
Shapes, Chicago	1.60	1.70	1.70	1.70
Tank plates, Pittsburgh	1.50	1.60	1.60	1.60
Tank plates, Philadelphia	1.73½	1.73½	1.80½	1.80½
Tank plates, Chicago	1.60	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.85	1.85	1.85	1.90
†Sheets, No. 24, hot, ann., Pitts.	2.40	2.40	2.40	2.35
Sheets, No. 24, galvan., Pitts	2.90	2.90	2.90	2.90
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.00	2.15
†Sheets, No. 24, hot, ann., Chi.	2.55	2.55	2.55	2.50
Sheets, No. 24 galvan., Chi.	3.05	3.05	3.05	3.15
Plain wire, Pittsburgh	2.20	2.20	2.20	2.25
Wire nails, Pittsburgh	1.90	1.90	1.90	1.90
Tin plate, per base box, Pitts.	4.75	4.75	5.00	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.80	12.75
Heavy melting steel, eastern Pa.	7.87½	7.95	8.75	11.00
Heavy melting steel, Chicago	7.50	7.65	7.95	10.00
No. 1 wrought, eastern Pa.	9.50	9.50	9.75	13.50
No. 1 wrought, Chicago	8.00	8.00	8.00	10.00
Rails for rolling, Chicago	10.00	10.00	10.50	13.00

Sheets

Concessions More General at Detroit—Pittsburgh Mills Defer First Quarter Announcement

SHEET PRICES, PAGE 59

Pittsburgh—Sheet business shows little change despite reports of occasional gains in automotive orders. Automotive demand still is made up mainly of small lots, and although several inquiries are pending for first quarter little tonnage has been booked. Specifications from other users are fairly steady. Operations are holding at the rate of the preceding several weeks, 25 to 30 per cent. Producers defer opening books for first quarter. The autobody price has been under pressure recently but due to the light volume of business placed the market is not clearly defined, being nominally 3.10c. Quotations on other grades are relatively firmer, with hot-rolled annealed sheets 2.40c; blue annealed, 1.85c; and galvanized, 2.90c.

Philadelphia—Some buying is noted for autobody construction, but the bulk of requirements have not yet been placed. The fact stocks are light indicates a pick up early next year. Sellers display a tendency to reaffirm prices for first quarter.

Buffalo—A Syracuse manufacturer has placed 2000 tons of sheets with a Buffalo producer, and business in general is a little brighter. The state is to award 1800 tons soon for license plates.

New York—Sheet prices generally are unchanged, notwithstanding slack demand. Some sellers have indicated their intention of extending current prices into first quarter.

Youngstown, O.—Orders from the automotive industry have been small since the Chevrolet Motor Co. recently distributed 4000 tons of one-pass, single-pickled black and other grades among several mills. Consumers in other lines also are buying cautiously, unwilling to add to stocks at inventory time. Little new business is expected until after the middle of the month. Not all valley independent mills are active, and some are operating only on alternate weeks. Demand for galvanized sheets is light. Despite rumors of lower quotations, makers here claim prices are firm.

Cincinnati—Mills in this district have extended present quotations for the first quarter, except on enameling stock which will be $3 a ton lower.

Cleveland—Automobile partsmakers are not increasing specifications for sheets, pending orders from the motor companies. No appreciable backlogs are being built up by the mills, current sales remaining small, and little inquiry coming out for first quarter. On the light character of purchasing, quoted figures hold fairly well, though concessions are reported general in the Detroit district on autobody and other grades. On new business here, No. 24 hot-rolled annealed is quoted 2.40c; blue annealed, 1.85c, Pittsburgh; and galvanized 2.90c.

Chicago—More interest in first quarter is shown by automotive and general consumers. Requests for prices have come from a number of light and heavy manufacturers, whose inventories consist largely of stock in transit. First quarter galvanized and hot-rolled annealed sales are noted at 3.00c and 2.50c, mills, respectively. Western mill operations remain at 20 to 25 per cent.

Labor Half Railroad Cost

Labor charges consumed almost half of the $2,355,000,000 expended by Class 1 railroads for operating charges in 1930, states the department of commerce in its *Commerce Yearbook*.

The division of the railroad operating dollar for 1930 was labor, 44.6c; materials, supplies etc., 18c; taxes, 6.60c; locomotive fuel, 5.4c; all other expenses 9c; leaving 16.4c as net operating income.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh base	1.70c
Gary, Ind. Harbor, base..	1.80c
Chicago, del.	1.85c
Philadelphia, del.	1.99c
Birmingham, base	1.85c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.14c
St. Louis, delivered	2.20¼c
Birmingham	2.00c
San Francisco, c.i.f.	2.33c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.40c
Gary, Ind. Harbor, base	2.50c
Chicago, del.	2.55c
Philadelphia, del.	2.69c
Birmingham, base	2.55c
St. Louis, del.	2.75¼c
San Francisco, c.i.f.	2.88c

GALVANIZED No. 24

Pittsburgh, base	2.90c
Gary, Ind. Harbor, base	3.00c
Chicago, del.	3.05c
Philadelphia, base	3.19c
Birmingham, base	3.05c
St. Louis, del.	3.25¼c
San Francisco, c.i.f.	3.38c

AUTOMOBILE No. 20

Pittsburgh, base	3.10c

FURNITURE

Pitts., No. 10 heavy	2.75c
Pitts., No. 20 light	3.35c

TIN MILL BLACK No. 28

Pittsburgh, base	2.65c
Gary base	2.75c
St. Louis, del.	3.00½c

HEAVY COLD ROLLED No. 10

Pittsburgh base	2.35c
Gary, Ind. Harbor, base	2.45c
Chicago, del.	2.50c
Philadelphia, del.	2.64c
St. Louis, del.	2.70½c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, Ind. Harbor, base	3.05c
Chicago, del.	3.10c
Philadelphia, del.	3.24c
St. Louis, del.	3.30½c

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$4.75

Gary, Ind., base 10 cents higher.

Long ternes, 24, unassorted, lb.	3.15c

Wire Products

For First Quarter

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.90

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.50c to 1.60c
Philadelphia, del.	1.73½c to 1.78½c
New York, delivered	1.83c to 1.88c
Boston, delivered	2.00c
Chicago, base	1.60c to 1.70c
Cleveland, del.	1.68½c to 1.78½c
Lackawanna, N. Y., base	1.60c to 1.70c
Birmingham, base	1.75c
Coatesville, Pa., base	1.65c to 1.70c
Pacific Coast, c.i.f.	1.85c to 1.95c
St. Louis, del.	1.95½c

Structural Shapes

Pittsburgh, base	1.50c to 1.60c
Philadelphia, del.	1.69½c
New York, del.	1.80¼c to 1.85¼c
Boston, del.	1.98½c
Chicago, base	1.60c to 1.70c
Cleveland, delivered	1.68½c to 1.78½c
Lackawanna, N. Y. base	1.60c to 1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.60c to 1.70c
Birmingham, base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.05c
Cleveland, base, local del.	1.65c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.89c
New York, del.	1.93c
Boston, del.	2.00c
Pittsburgh, cold finish	1.85c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.60c to 1.65c
New York, delivered	1.88c to 1.98c
Philadelphia, delivered	1.84c to 1.94c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.50c to 1.60c
Chi., rail steel	1.30c to 1.50c
Chi., rail steel, bridge and culvert	1.40c to 1.50c
Philadelphia, cut lengths	2.04c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.00c to 2.10c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10	
2300	1.50	Cr.	0.45
2500	2.25	51.00 Cr.	
3100	0.55	spring	0.20
3200	1.35	6100 bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.20	Cr., Ni., Van.	1.50
4100 .15 to .25		Carbon Van.	0.95
Mo.	0.50	9250 (flats)	0.25
4600 .20 to .30 Mo.		9250 (rds.,sq.)	0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.60c
Do, 6 1/16 to 24-in., Pitts.	1.50c
Hot strip, bands 6 in. and under, Chicago	1.70c
Do, 6 1/16 to 24 in.	1.60c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do., Chicago	1.85c to 1.95c
Cold rolled strip, Pitts., Cleveland	2.05c
Worcester, 3 tons, over	2.30c

Rails, Track Material

Standard bess. and open-hearth rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread.....73, 10 and 10 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.
Eagle list .....73, 10 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts .....73, 10 and 10 off
Tire bolts ..... 60, 10 and 10 off
Stove bolts, 80-25-10 off in pkgs.; 80-25-10-2½ off in bulk.
Rolled thread machine bolts, ⅝ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished .....73, 10 and 10 off

HEXAGON CAP SCREWS

Milled .....80-10-10-5 off
Upset 1 in. diam. and smaller....85-10 off

SQUARE HEAD SET SCREWS

Milled .....80-5 off
Upset 1 in. and smaller .....80-10-5 off
Upset, larger than 1 in. 80-5off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c
Do, less carloads, 5 kegs or over, 2.75c; less than 5 kegs 2.90c.
Chain, BB, BBB, 9/16-1½ in....33 1/3 off
Sheet piling, Pitts. 1.90c

Bars

Price Reduced $2 a Ton by Some Chicago Sellers—Buyers Seeking First Quarter Coverage

BAR PRICES, PAGE 59

Chicago—While carbon bar prices now are quoted at 1.60c to 1.70c, mills, or $2 below the recent level, mills still have made no first quarter price announcement, and one producer expects 1.70c, Chicago, to govern sales. Several buyers are seeking price arrangements covering January shipments. Western automotive partsmakers, while still active, are specifying more moderately than in the last two weeks. Allocation of the Ford automotive business will release additional orders in this district. Tractor plants have received final payments on the Russian orders shipped late in 1930 and in the first quarter this year. Some implement plants in Illinois and Iowa are resuming on a partial scale. Road and excavating equipment makers are specifying at a fair rate, several getting into snow plow production. Bar production is about 30 per cent. Rail steel bar mills at Chicago Heights operate at 35 per cent.

New York—Commercial steel bars are unchanged at 1.60c, Pittsburgh, with little outstanding tonnage to afford a test. Common iron bars are 1.60c to 1.70c, Pittsburgh.

Philadelphia—The market for steel bars is dull, and prices are unchanged.

Pittsburgh—Steel bar sales continue light. Automotive orders still are limited to small lots, below expectations. The market lacks a thorough test but the 1.60c, Pittsburgh, price is fairly well observed on current orders.

Youngstown, O.—A slight increase is noted in common steel bar specifications from agricultural implement makers. Some manufacturers of automotive parts continue to specify alloy bars, but not in large amounts. This business is expected to pick up after the middle of the month. Common steel bars bring 1.60c, Pittsburgh.

Cleveland—Though orders for mild steel bars have shown little variation recently, alloy bar specifications were distinctly better last week due to releases from a large automobile manufacturer west of here. The present 1.65c, Cleveland base, for merchant bars for outside and local delivery is observed.

Birmingham, Ala.—Demand shows a slight decrease but production is under last month's rate.

Tin Plate Output Up; Large Export Inquiry

Tin Plate Prices, Page 59

Pittsburgh—Tin plate specifications have increased recently and one local producer has stepped up its operations, raising output for the industry three points to 48 per cent. A fairly steady rate is in prospect for the remainder of the month. Additional first quarter contracting is being done at $4.75, Pittsburgh, per base box.

St. Louis—Some advance orders for tin plate are noted. The Pet Milk Co., St. Louis, has placed its 1932 requirements, estimated at about 25,000 boxes. The company operates six canning plants. The allocation of the order was not disclosed, but a substantial portion is believed to have been placed with the leading local producer.

New York—The Argentine government is inquiring for 70,000 base boxes of tin plate for delivery in the first half. This is the largest export inquiry in some time. The Standard Oil Co. of New Jersey inquiry, recently noted, required 100,000 base boxes.

Cold-Finished Demand Reflects Auto Slowness

Cold Finished Prices, Page 59

Pittsburgh—Scattered releases of cold-finished bar tonnage for automotive purposes still involve only small lots. Miscellaneous buying lacks improvement. The general market continues 2.10c, Pittsburgh, with little interest shown in first-quarter contracts.

Cleveland—Cold bar finishers are not getting enough business to justify 20 per cent operations. Here and there is a comparatively bright spot in specifications such as the recent order White Motor Co. took for over 700 trucks for New York. The base has not been announced for first quarter and remains currently 2.00c to 2.10c, Cleveland.

Plates

Pipe Line Work Not Developing as Briskly as Expected—Price Situation Easier

PLATE PRICES, PAGE 59

Chicago—Failure of pipe line orders to develop as expected leaves plate mills with no immediate prospects aside from public work. Plates now are 1.60c to 1.70c, Chicago. Only about 1000 tons of miscellaneous refinery tank material has been allocated. Storage refinery tank demand this year has been cut in half from average lettings in the last three years, due to low oil prices, prorating policies, and difficulty in financing needed projects by smaller refinery units. Eastern mills will furnish the 3250 tons of tunnel plates for the Chicago sanitary district intercepting sewer.

New York—Demand for plates is quiet, with prices easier at 1.65c to 1.70c, Coatesville, Pa. Pipe and tank work is negligible, and except some locomotive tonnage for the Lehigh Valley and Lackawanna railroads, railroad requirements are light. Standard Oil Co. of New York is inquiring for an unstated amount of plates and shapes for delivery in the first quarter to Canadian plants.

Boston—Sales are light, and prices easy. New shipyard demands are dull. For stacks and tanks, Boston postoffice, the Cleghorn Co., heating contractors placed close to 100 tons with the Central Iron & Steel Co., to be fabricated by the Coatesville Boiler Works, Coatesville, Pa., while the 55 tons of galvanized iron sheets went to Republic Steel Corp.

Philadelphia—Little plate tonnage is in sight. Prices are unchanged.

Pittsburgh—Plate business is light. Activity in fabricated work is confined to small tonnages. Little business is noted for river equipment, despite the fact a fair volume of work is pending. The nominal market continues 1.60c, with 1.50c on the more attractive lots.

Cleveland—Plate orders are slower, due to inventories. It is expected that with the turn of the year implement and road equipment makers will purchase more plates. For quality plates to analysis as flanged, fire-

box and other material, the 1.60c, Pittsburgh base, is holding; likewise this price holds for small orders in standard gages, but some shading is likely on volume purchases.

Contracts Placed

3250 tons, tunnel plates for Chicago street and Blue Island avenue, Chicago; to Commercial Shearing & Stamping Co., and Truscon Steel Co., Youngstown, O.

1800 tons, six water tanks, Long Beach, Calif., to Western Pipe & Steel Co., Los Angeles.

300 tons, oil tank, Midland, Mich., to Chicago Bridge & Iron Works, Chicago.

225 tons, coast guard cutter No. 55 for United States government, to Carnegie Steel Co., Pittsburgh, through De Foe Boat & Motor Works, Bay City, Mich.

125 tons, 30-inch water pipe, Tacoma, Wash., to Birchfield Boiler Works, Tacoma.

Contracts Pending

Unstated tonnage, 10,000,000-gallon oil storage and distribution plant for Shell Oil Co. of Canada, Hamilton, Ont.

Refractory Sales Low As Construction Lags

Refractories Prices, Page 70

Pittsburgh — Sales of refractory material continue in the low volume prevailing since the middle of the year. Production is barely 20 per cent of capacity. Considerable mill equipment is in need of repairs but only necessary work is being done and stocks are extremely light. Producers are in a position to benefit immediately from any improvement in mill operations as a result of this condition but look for little change in demand until early next year.

Current business is almost entirely for repair work since little new construction is under way. Prices are unchanged, usually continuing $40 for first quality fire clay brick and silica brick. Second quality material is $25 to $35, with magnesite brick $65 and chrome brick $45.

Buys Wire Strand, Clips

Memphis, Tenn.—Broderick & Bascom Rope Co., St. Louis, has been awarded 100 tons of ½-inch galvanized wire strand for the army engineer. Sheffield Steel Corp., Kansas City, Mo., was awarded 80,000 sets paraffin coated plate clips at $26.75 per 1000.

Davis Automatic Equipment Corp., New York, has changed its name to American Locker Co. of New York.

Railroads

November Car Awards Year's Second Low—Reading Co. to Spend $4,000,000

TRACK MATERIAL PRICES, PAGE 59

New York—Domestic freight car awards of 35 in November were the second lowest for any month of 1931. The lowest total was 20, in May. Decision of the Northern Pacific to advertise for bids on 150 cars, instead of building them in its own shops, as previously announced, is responsible for the November showing falling short of expectations.

Total awards for the first 11 months are 9833, against 42,417 in the corresponding period of 1930; and 96,395 in the corresponding period of 1929. Further comparisons follow:

	1931	1930	1929	1928
Jan.	100	5,072	13,196	4,160
Feb.	50	17,027	15,944	10,220
March	2,166	6,118	12,023	2,958
April	2,798	1,997	8,205	6,043
May	20	1,392	7,562	2,531
June	1,910	998	5,886	2,422
July	367	1,389	341	582
Aug	1,104	1,111	2,854	677
Sept.	503	576	4,517	1,378
Oct.	780	4,116	19,506	2,853
11 mo.	9,833	42,417	96,395	39,964
Nov.	35	2,621	6,361	6,140
Dec.	.....	2,729	9,710	4,799
Total	.....	45,146	106,105	44,763

Current car demand is at a virtual standstill. Possibility of early action by the Delaware, Lackawanna & Western on its list of 12 locomotives is the only feature in the market for this equipment.

The Reading Co. has authorized new equipment and construction work, costing $4,000,000. New work includes immediate extension of the electrification program from Philadelphia to Norristown, Pa., a distance of 17 miles, construction of 30 multiple unit electric coaches, previously noted, and 20 trailers, and a new pier at Port Richmond, Philadelphia.

Pennsylvania railroad takes bids Dec. 25 on 25,000 steel wheels.

Pittsburgh—New inquiry is particularly light in the market for railroad material, the carriers continuing slow in seeking bids on annual rail requirements while the car market is dormant. Light rails are quiet.

Chicago—Bids went in last week for 300 underframes for Western Fruit Express, and 150 hopper cars for Northern Pacific. Chicago, Burlington & Quincy has withdrawn the inquiry for 40 underframes issued recently. Rail mill schedules have been made up for the 43,000 tons of rails ordered by Santa Fe late in October, and shipments will start shortly. The Burlington inquiry for 35,000 tons of rails still is deferred.

Cleveland—Until rail inquiries from the Nickel Plate and Erie are expected after the first of the year, steel purchasing by the railroads here is extremely quiet.

Rail Orders Placed

Atchison, Topeka & Santa Fe, 7500 tons fastenings to Colorado Fuel & Iron Co., Pueblo, Colo. Order accompanies the 43,000 tons of rails placed by the railroad among three producers as noted in STEEL, Oct. 26.

Car Orders Pending

Alaska railroad, Seattle, 10 new Hart convertible, 50-ton capacity, 40 feet in length, steel underframes; bids Dec. 18.

Locomotives Pending

Alaska railroad, Seattle, one standard gage, mountain type, 259,000 pounds, delivered Seattle dismantled for shipment; bids in.

Wire Rods Advance $2; Sheet Bars, Billets Steady

Semifinished Prices, Page 70

Pittsburgh—Consumers of semifinished steel are curtailing stocks as well as new orders, and in view of the lack of improvement in finishing mill operations incoming business and shipments remain quiet. price announcements for the first quarter are lacking and current sales usually are at $29, Pittsburgh, for rerolling billets, slabs and sheet bars, with forging billets $35. Wire rods have been $35 but a $2 advance effective immediately and for first quarter is being announced.

Youngstown, O.—Wire rods have been advanced $2 a ton to $37, Pittsburgh and Cleveland, for first quarter. Billets, sheet bars, and slabs continue to bring $29, Youngstown and Pittsburgh. Occasional shipments are made by valley producers, but few contracts extending into first quarter are being closed.

Cleveland — Semifinished steel shipments are slower. The leading merchant producer here is operating four of its 14 open hearths, one less than a week ago. Sheet bars, billets and slabs are $29, Cleveland and Youngstown, O.

Structural Shapes

Albany Bridge, 5445 Tons, Goes to McClintic-Marshall —Chicago Piling Jobs Active — Bids Before Next Week on 25,000 Tons Shapes at New York

STRUCTURAL SHAPE PRICES, PAGE 59

New York—Bids go in this and next week on jobs taking close to 25,000 tons, but new inquiry is light. These include another small pier. Lettings, outside about 6000 tons for state bridges, the largest at Albany, N. Y., are light. Contractors in most instances are slow to place steel for work they have been awarded. Prices on fabricated and erected material are mixed, reflecting more generally 1.65c, eastern mill, on plain shapes.

Boston—Structural lettings are confined almost entirely to public work. Bids close this month on two small federal buildings at Bedford, Mass., and New London, Conn. Steel for the Morton street bridge here has been let. Prices on fabricated structural material are weak as are plain shapes on attractive business.

Philadelphia — Shapes are 1.65c, nearest mill, with business light. This week is expected to see the placing of four structural jobs totaling 1500 tons.

Pittsburgh—A few large structural projects are pending while new inquiry is made up largely of moderate lots. Specifications are little changed since a month ago. Shapes are 1.50c to 1.60c.

Cleveland—Several projects are in the pending stage but not being as yet in general contractors hands, are not close to award. These include the Columbus, O., baseball park and the local Goodyear Tire & Rubber Co. service station. The Niles, O., post office, a small job, has been placed. Bids go in Dec. 8 on several small state bridges taking odd lots of structural. A quantity of shapes have been placed by American Shipbuilding Co. for the conversion of three lake freighters to self-unloaders. On the small run of current orders for shapes, 1.60c, Pittsburgh, is quoted, though lower has been done on orders of size.

Chicago—Plain structural material prices now are 1.60c to 1.70c, Chicago. Several steel piling projects are pending. South Park commission, Chicago, has taken bids on 800 tons for the Ogden slip and Chicago river bulkhead. Bids will be taken Dec. 17 on 300 tons of permanent and 600 tons of temporary piling for the Mississippi river dam at Rock Island, Ill., and about 1500 tons will be let for the lock and dam at Alma, Wis., but injunction proceedings threaten some delay. About 4000 tons has been let this week.

Contracts Placed

5445 tons, New York state bridge, Albany-Renssallaer, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa., through Booth & Flinn, contractors, Pittsburgh.

3000 tons, conversion of three lake freighters to self-unloaders, to Pittsburgh district mills, through American Shipbuilding Co., Cleveland; work to be done at Lorain, O., division.

1750 tons, two bascule bridges, Illinois waterways commission, Jackson, Jefferson streets, Chicago, to Mississippi Valley Structural Steel Co., Decatur, Ill.

1000 tons, bridge over White river, Crossville, Ill., to A. Guthrie & Co. Inc., Chicago.

940 tons, transit shed No. 2, Albany Port District commission, Albany, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.; H. J. Blessing, engineer and contractor. Thirty tons bars to be bought.

900 tons, coal tipple, Linton, Ind., to McNally-Pittsburgh Mfg. Co., Pittsburgh.

720 tons, postoffice, Greensboro, N. C., to Virginia Bridge & Iron Co., Roanoke, Va.; Algernon Blair, Montgomery, Ala., contractor.

500 tons, Cosmopolitan club, New York, to Harris Structural Steel Co., New York, through Binger & Ginsberg, contractors.

440 tons, Touloose street wharf, Port of New Orleans, to Jones & Laughlin Steel Corp., Pittsburgh.

385 tons, postoffice, Altoona, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.; R. B. McDaniel, New Brighton, Pa., contractor.

Awards Compared

	Tons
Awards, week ended Dec. 5	**19,047**
Awards, week ended Nov. 28	**24,659**
Awards, week ended Nov. 21	**11,734**
Awards, this week in 1930	**18,816**
Av. weekly awards, 1930....	**35,242**
Av. weekly awards, 1931....	**34,820**
Av. weekly awards, Nov....	**17,984**
Total awards to date, 1930..	**1,759,573**
Total awards to date, 1931..	**1,706,168**

320 tons, high school, Dedham, Mass., to Boston Structural Steel Co., Boston.

300 tons, additional to 140-ton award for same item in STEEL, Nov. 30, land chamber, Marmot lock, Great Kanawha river, W. Va., to Dravo Contracting Co., Pittsburgh.

300 tons, highway bridge, Wilmington, Del., to American Bridge Co., Pittsburgh.

300 tons, bridge, Philadelphia, for Reading railroad, to American Bridge Co., Pittsburgh.

269 tons, addition, state house, Dover, Del., to Lehigh Structural Steel Co., Allentown, Pa., 36 tons reinforcing bars to American Steel Engineering Co., Philadelphia; Allen L. Lauritsen Co., Wilmington, Del., contractor.

265 tons, bridge, Morton street, Boston, included in Canterbury street contract, to American Bridge Co., Pittsburgh; John F. Kennedy Co., Cambridge, Mass., contractor.

250 tons, pumping station, Ft. Wayne, Ind., to Bass Foundry & Machine Co., Ft. Wayne, Ind.

225 tons, bridge, Williamson county, Ill., to Vincennes Bridge Co., Vincennes, Ind.

210 tons, overcrossing, Pelham, N. Y., to American Bridge Co., Pittsburgh, through Miller Bros., contractor.

200 tons, bridge over Illinois river, Brandon road, Joliet, Ill., to Independent Bridge Co., Indianapolis.

200 tons, coast guard cutter No. 55 for United States government, to Carnegie Steel Co., through De Foe Boat & Motor Works, Bay City, Mich.

200 tons, two highway bridges, Boston, to American Bridge Co., Pittsburgh.

200 tons, addition, court house, Cambridge, Mass., to Boston Structural Steel Co., Boston.

175 tons, Thorne hall, Northwestern university, Evanston, Ill., to Midland Structural Steel Co., Chicago.

163 tons, New York state bridge, Renssallaer county, N. Y., to American Bridge Co., Pittsburgh.

155 tons, school addition, First and Vermont streets, Los Angeles, to Consolidated Steel Corp., Los Angeles.

150 tons, postoffice, Aurora, Ill., to Midland Structural Steel Co., Chicago.

150 tons, building, Philadelphia Electric Co., Allegheny avenue, Philadelphia, to McClintic-Marshall Corp., Bethlehem Pa.

150 tons, naval militia armory, New Rochelle, N. Y., to Lehigh Structural Steel Co., Allentown, Pa., through George Colon Co., contractor.

125 tons, postoffice addition, Berkeley, Calif., 75 tons shapes to Moore Shipbuilding Co., Oakland, Calif., and 59 tons reinforcing to Soule Steel Co., San Francisco; K. E. Parker Co., San Francisco, contractor.

100 tons or more, warehouse, Great Atlantic & Pacific Tea Co., Charlotte, N. C., to Southern Engineering Co., Charlotte, N. C.; J. A. Jones Construction Co., contractor.

100 tons, incinerator plant, Worcester, Mass., to Eastern Bridge & Structural Co., Worcester, Mass.

100 tons, building, Mount Vernon, N. Y., to Belmont Iron Works, Philadelphia.

100 tons, new Biddle street market, St. Louis, to Kaysing Iron Co., St. Louis.

100 tons, steel trusses, freight terminal buildings, 2600 Long Beach avenue, Los Angeles, to Soule Steel Co., Los Angeles.

100 tons, approximately, postoffice, Niles, O., 60 tons shapes to Harr-Thayer Iron Co., Youngstown, O., and

30 tons reinforcing to Truscon Steel Co., Youngstown, O., through Yuhasy & Olsen, Gary, Ind., contractors.

100 tons, grade separation, Bedford, O., to Mt. Vernon Bridge Co., Mt. Vernon, O., through E. H. Latham Co., Columbus, O., contractor.

Contracts Pending

2000 tons, Wilson high school, Chicago; Duffin Iron Co., Chicago, low.

1800 tons, building, Boston, for Commonwealth of Massachusetts.

1500 tons, steel piling and light shapes for Mississippi river lock and dam, Alma, Wis., in addition to 1000 tons of structural steel and 1000 tons of castings; bids Dec. 17.

1300 tons, Madden dam, Panama canal zone, Stupp Bros. Bridge & Iron Co., St. Louis, low.

1200 tons, New York Central railroad viaduct through Bell Telephone Laboratories, Bethune street, New York.

800 tons, steel piling for Ogden slip and Chicago river bulkhead, Chicago; bids in.

750 tons, five highway bridges in Minnesota.

600 tons, temporary steel piling for Mississippi river lock and dam, Rock Island, Ill., and 300 tons, permanent steel piling; bids Dec. 17.

647 tons, bridges, Pennsylvania railroad, Perryville and Patapsco, Md.; bids taken Dec. 8.

500 tons, highway bridge, Allentown, Pa.

450 tons, high school, Pottstown, Pa.; closing postponed to Dec. 12.

400 tons, incinerator building, Washington.

400 tons, woolen mill, Charlottesville, Va.

400 tons, hospital addition, Lakeland county, N. J.; Bethlehem Fabricators Inc., Bethlehem, Pa., among low bidders.

300 tons, piling, bridge, Wilmington, Del.; Seeds & Derham, Philadelphia, contractors.

300 tons, municipal pier shed, Trenton, N. J.; bids Dec. 4.

300 tons, building, Kings Park hospital, New York.

250 tons, hospital, Rockaway Beach,

250 tons, United States hospital, Springfield, Mo.

250 tons, state hospital, Fairview, Pa.; bids about Dec. 23.

250 tons, Monroe avenue bridge, Green Bay, Wis.; bids Dec. 8.

200 tons, school, Thirty-second and Tasker avenues, Philadelphia; Cramp & Co., low.

200 tons, pier shed reconstruction, Reading railroad, Port Richmond, Philadelphia.

200 tons, beam spans for Missouri Pacific railroad.

150 tons, Bell Telephone Co. exchange building extension, Woodland avenue, Philadelphia.

137 tons, school addition, Rising Sun avenue, Philadelphia; Kober Construction Co., low.

135 tons, bridgework, LeFlore county, Okla.; Oklahoma highway commission, bids Dec. 15.

123 tons, hospital, Norristown, Pa.; bids Dec. 10 through E. R. Bastress, Mount Carmel, Pa., contractor.

Unstated tonnage, addition, soldiers home, Sawtelle, Calif.; Murch Bros. Construction Co., St. Louis, contractors.

Concrete Bars

New York Bridges Take 2000 Tons—Chicago Buying 600 Tons—New York Sewer Work and State Hospitals Lead—Small Lots Fairly Numerous—Awards Light

REINFORCING BAR PRICES, PAGE 59

New York—Bridges at Albany and Troy, more than 2000 tons have been let, awards here holding well. A sterilization plant, Yonkers, N. Y., has also been placed. Several hundred tons are included in additional sewer sections about to come out in Westchester county, bids on three contracts going in this week. State hospitals in Brooklyn and upstate also require large tonnages. Prices on small lots are fairly steady at 1.98c on mill lengths, but concessions continue on larger lots.

Boston—State bridges and buildings contribute the bulk of business, including 200 tons for the Revere Beach sea wall placed by a Saugus contractor. Inquiry in small lots is fairly active. Prices are unchanged with some concessions on larger lots.

Pittsburgh—Activity is well maintained, showing less than the expected seasonal decline. Inquiry is fairly active and incoming business shows little change from the rate of the past several weeks. The market generally is 1.60c, Pittsburgh, for mill lengths.

Cleveland — Federal and state work continues the bulwark to the concrete bar market, but in itself hardly sufficient to give enough sizable jobs. Bids go in Dec. 8 at Columbus, O., for state bridges, most of which call for reinforcing steel. State lettings, since mid-year, have been numerous, being on the average of twice a month.

An Ohio state highway department letting Dec. 18 will involve about $1,000,000, the largest to date. It is expected a large tonnage of reinforcing steel will be involved, as well as structural.

Philadelphia — Reinforcing bar prices are fairly steady on billet quality, although unsettled on rerolling material. Few tonnages are active.

Chicago—Chicago sanitary district is placing 600 tons of reinforcing bars for sewer tunnel work, and 5000 tons will be up Dec. 17 for the Rock Island, Ill., dam and locks. Billet bars are quoted 1.50c to 1.60c. Several hundred tons additional in Illinois road work has been allocated for next season. Building inquiries are light.

Awards Compared

	Tons
Awards, week ended Dec. 5	**6,120**
Awards, week ended Nov. 28	**2,543**
Awards, week ended Nov. 21	**11,567**
Awards this week in 1930..	**4,350**
Av. weekly awards, 1930..	**6,990**
Av. weekly awards, Nov.....	**6,358**
Av. weekly awards, 1931....	**7,067**
Total awards to date, 1930..	**357,222**
Total awards to date, 1931	**346,320**

Contracts Placed

1750 tons, Albany-Rensselaer bridge, to Kalman Steel Corp., Bethlehem, Pa., through Booth & Flinn, Pittsburgh, contractors.

750 tons, delinquent home, Springfield, Mo., to Sheffield Steel Corp., Kansas City, Mo.

350 tons, superstructure, plant, Lever Bros., Edgewater, N. J., to Igoe Bros., Newark, N. J.; White Construction Co., contractor.

300 tons, Third street bridge, San Francisco, to Pacific Coast Steel Corp., San Francisco.

300 tons, road work, Monmouth county, N. J., to Taylor-Davis Co., Philadelphia.

225 tons, substructure, Troy-Menands bridge, New York, to Albany Iron & Steel Co., Albany, N. Y.; through J. J. Farley Construction Co., sub-contractor.

255 tons, bridge approaches, Wilmington, Del., to Concrete Steel Co., New York.

225 tons, masonry piers, Triboro bridge, New York, to Day & Goeter, New York; Rodgers & Hagerty Inc., contractor.

215 tons, sterilization plant, North Yonkers, N. Y., Westchester county sanitary sewer commission, to Kalman Steel Corp., Bethlehem, Pa.; Northeastern Construction Co., contractor.

210 tons, highway and bridge, Elmsford, N. Y., to Tidewater Structural Materials Corp., Hagerstown, Md.

200 tons, sea wall, Revere Beach, Mass., to Barker Steel Co., Boston; M. McDonough Co., Saugus, Mass., contractor.

200 tons, Illinois road work to several unstated fabricators.

200 tons, reservoir roof, Glendale, Calif., to unnamed interest.

160 tons, Lynn place viaduct, Seattle, and state bridge, Wenatchee, Wash., to Northwest Steel Rolling Mills and Pacific Coast Steel Corp., Seattle, respectively.

150 tons, Goldberg arcade, Oak Park,

(*Concluded on Page 67*)

Strip

Expected Buying Is Delayed—Automotive Needs Small and Other Consumers Take Little

STRIP PRICES, PAGE 59

Pittsburgh—Occasional gains are noted in strip releases from automotive interests but are in insufficient volume to provide material improvement in total business. Orders from other users generally are steady but year-end influences are restricting business. Little change in shipments is looked for over the balance of the month. First quarter inquiry is light and producers have little occasion for quoting prices. The market usually is 1.50c and 1.60c for hot strip, with cold-rolled quotations 2.05c to 2.15c.

New York — Hot-rolled strip is moving slowly at 1.50c and 1.60c, Pittsburgh, although some sellers have indicated their intention of quoting $1 higher on first quarter shipments. However, the general tone is weak, and on cold-rolled strip, 2.05c, Pittsburgh, appears none too steady.

Youngstown, O.—Slow specifications from auto partsmakers have dissipated hopes of good tonnages for early December, but they look for orders calling for late December and early January rolling of both hot and cold strip. Other users are buying sparingly before inventory.

Cleveland—A few hot-rolled strip contracts have been closed on the basis of 1.55c and 1.65c, mill, for first quarter, 1932, which figures have been named by a leading interest and represent, at least for the time being, a stabilization on the two hot-rolled widths. Cold-rolled has been quoted at 2.15c, base Cleveland, but nothing has been closed at that figure in current tonnage.

Chicago—Hot-rolled strip operations continue at 25 to 30 per cent. Prices generally are lower, in line with quotations named by eastern mills. Hot strip, narrow sizes, now is quoted 1.70c, Chicago, or $1 under the recent level. Wide strip is quoted 1.60c.

Two makers have announced prices for first quarter, on hot-rolled, 1.75c, Chicago, for narrow, and 1.65c, Chicago, for wide. Cold-rolled is held at 2.05c, Cleveland, or 2.33c, Chicago, for that delivery.

Gulf States Steel Co., Birmingham, Ala., is first metallurgical plant to receive a certificate from the bureau of mines, Pittsburgh, showing employes at its Gadsden steel mill 100 per cent trained in first aid.

Operations Down to 26 Per Cent; Low for 1931

Pittsburgh—Ingot production was unchanged during the past week at the 28 per cent rate to which it declined the preceding week. Schedules of steelworks blast furnaces continue at ten active stacks of 54. Sheet output continues 25 to 30 per cent but tin plate is higher at 48. Strip and pipe are unchanged at 25.

	Per Cent
Operations, week ended Dec. 5...	26
Operations, week ended Nov. 28	29.5
Operations, week ended Nov. 21	31
Operations, this week, 1930.....	40
High for 1931 (March 19)	57
Low for 1931 (Dec. 5).....	26

Philadelphia—Ingot output was off five points to 23-24 per cent last week. This is the widest week-to-week break of the year. Indications point to further decline this week.

Buffalo—Operations probably will drop to about 27 per cent of capacity this week, after holding at 35 per cent up to Dec. 5. An increase to the latter percentage is anticipated for the week of Dec. 14, followed by an almost complete suspension of ingot production for the holidays.

Youngstown, O.—Steel operations in this district last week averaged 32 per cent, off two points from the week before, but were expected to decline six to eight points this week as a result of suspension of Republic Steel Corp.'s Warren, O., open-hearth plant for repairs. This division had been running five of eight furnaces. Fifteen or 16 of 66 open hearths were expected to be melting this week in the district, against 20 last week and 23 two weeks ago. Automobile steel orders in fair volume were anticipated this week, accompanying a probable rise in sheet, strip and bar output.

Cleveland — Steelmaking operations here were off three points last week to 35 per cent of capacity, due to taking off of an open hearth at the Corrigan, McKinney Steel Co. This represents a drop from the 38 per cent rate of the week prior. For

(*Concluded on Page* 72)

Warehouse December Sales Forecast Dull

Warehouse Prices, Page 81

New York—Volume continues to drag at the November rate, which was below that of October. Listed prices are unchanged, but shading is noted on most products where attractive business is involved.

Boston—While there is some shading, listed prices are fairly well maintained by leading jobbers, with bars 3.25c and plates and shapes 3.35c. Sheet price base holds at 3.60c for No. 10 blue, 4.20c for No. 24 black and 4.75c for galvanized. While volume is light, small shipment business is fair, with price cutting no more prevalent than might be expected under restricted demand.

Pittsburgh—Business is steady but seasonal influences are expected to curtail demand over the remainder of December. Orders represent urgent requirements. Prices are unchanged.

Cleveland—Some steel sheet and bar business is going, in very definitely restricted tonnages which have provided unprofitable for producing mills to attempt deliveries. Other lines show no special activity. Quotations remain unchanged.

Detroit—Day-to-day level of warehouse sales has been the same as in November. Somewhat earlier than usual, annual inventories in several plants have already been taken. The outlook is far from discouraging, some good orders for steel from stock being in immediate prospect.

Cincinnati—Warehouse orders numerically are being maintained at the rate of the last few months, but individual orders show a shrinkage, possibly due to year-end influences.

Chicago — Sales have dropped slightly from the encouraging volume in November, but this shrinkage is regarded largely seasonal. Buying is fairly active in cold-finished products and special sheets. Prices are unchanged.

St. Louis—November business fell measurably below the October total, and was in smaller volume than any month since last winter. Dullness extends to all classes of materials, but is most pronounced in tubular and other seasonal goods.

Concrete Bars Placed

(*Concluded from Page 63*)

Ill., to Calumet Steel Co., Chicago.

120 tons, Young county courthouse, Graham, Tex., to North Texas Iron & Steel Co., Fort Worth, Tex.; James T. Taylor, Fort Worth, contractor.

120 tons, addition, Westinghouse high school, Turtle Creek, Pa., to Carlem Engineering Co., Pittsburgh.

100 tons, school addition, First and Vermont streets, Los Angeles, to unnamed interest.

100 tons, postoffice, Waterbury, Conn., to Buffalo Steel Co., Tonawanda, N. Y., through Murch Bros. Construction Co.

100 tons, state barns, Thiell, Letchworth village, N. Y., to Joseph T. Ryerson & Son Inc., Chicago; Perlman & Wortman Co., New York, contractor.

100 tons, Morton street bridge, Boston, to Concrete Steel Co., New York; John F. Kennedy Co., Cambridge, Mass., contractor.

Unstated tonnage, 1485 mats reinforcing steel fabric, mostly 9 x 13 feet, Fort Benning, Ga., to W. C. Caye & Co., division, Wilson-Weesner-Wilkerson Co., Atlanta, Ga.

Contracts Pending

375 tons, building Peoples' National Bank, Tyler, Tex.; American Construction Co., contractor.

300 tons, hospital, Quincy, Ill.

200 tons, bridge, Brookline, Mass.

173 tons, highway work in Santa Barbara county, Calif.; bids opened.

125 tons, state bridge, Littleton, Mass.

125 tons, Pennsylvania railroad bridges, Elkton, Md.; bids Dec. 5.

115 tons, state hospital buildings, Norfolk-Monson, Mass.

110 tons, library for state teachers college, Chico, Calif.; bids being taken.

110 tons, state hospital building, Waltham, Mass.

105 tons, Prosser power canal work, Yakima project, Wash.; bids Dec. 30; bureau of reclamation, Denver.

100 tons, courthouse, Martinez, Calif.; bids Dec. 22.

100 tons, highway and bridge, Swampscott-Salem route, Mass.

100 tons, two bridges, Wellesley-Needham route, Massachusetts.

Unstated tonnage, 3000 sheets, reinforcing wire, Washington, D. C.; Wickwire-Spencer Steel Co., Buffalo, low, $1.34.

Unstated tonnage, veterans hospital, Coatesville, Pa.; bids Dec. 29.

Steel Shapes Important Item of Export Trade

Structural steel, both plain and fabricated, is one of the larger classes of steel exports from the United States, making up 18.6 per cent by weight of all iron and steel exports in 1930 and 19.7 per cent for nine months of 1931, according to an analysis by J. Joseph W. Palmer, of the iron and steel division, department of commerce.

Best markets are in North and Central America and the West Indies, 257,488 tons in 1930; Far East, 50,096 tons; South America, 48,045 tons. Europe and Africa took much less, but for opposite reasons. Europe has an excess production and Africa has few outlets and is largely made up of European colonies.

The United States produces more structural steel than any other portion of the world, probably equaling the output of the remainder of the world. American Iron and Steel institute figures for 1929 give shape production at 4,778,020 tons and plates 5,022,141 tons, a total of 9,800,161 tons. Comparable figures show British output in 1929 was 2,671,400 tons, Germany 2,272,054 tons and France 2,071,052 tons.

Exports in 1929 and 1930 were practically a fifth of total steel exports but were only 2.2 per cent of domestic production in 1930.

Imports of pig iron into the United States during the first six months of 1931 were 55,780 gross tons, valued at $661,207.

To Use Quality Mark on Reinforcing Steel

The Concrete Reinforcing Steel institute, now is prepared to put into effect the quality mark adopted recently. To combat foreign made steel and bars rolled from off-heat billets, it has been decided to operate in the East first, rather than on a national basis.

Contracts covering the use of the quality mark have been signed by a large percentage of the institute's members operating in the East. Use of steel of questionable origin in several eastern projects is said to have prompted action by the industry to show engineers and architects the benefits of certified steel.

Cuban exports of iron ore during third quarter were almost identical with those of second quarter, about 26,000 net tons, valued at approximately $70,000.

Pipe

Defer Purchase of Two Western Line Jobs—Cast Buying More Active

PIPE PRICES, PAGE 81

New York—Bids are in on several sewer contracts for Westchester county, about 900 tons. Additional sections will require close to 2500 tons, up for bids before the end of the year. The Emaus, Pa., foundry booked 450 tons for a New Rochelle sewer. Fresh inquiry is active for this period, Poughkeepsie, West Albany, Public Service Corp. of New Jersey, Ardsley, N. Y. and Newark N. J., having new inquiries. Prices are easy and under $30, foundry, is frequent. A New Jersey utility bought more than 1000 tons of small sizes.

Standard Oil Co. of New York and Vacuum Oil Co. have plans for construction of a steel pipe line but plans have not yet been definitely formulated.

Boston—Preliminary bids are being taken on a new reservoir and water system near Hartford, Conn., to take a good volume. A New Jersey foundry booked 345 tons for Maine and close to 200 tons more is pending for that state. On most business the range is $26 to $30, foundry.

Pittsburgh—Pipe business is quiet and producers are awaiting early 1932 for awards of line pipe for projects now under consideration. Action still is looked for soon on a portion of the branch line in Illinois of the Continental Construction Co. Some line pipe work during winter months is possible on the west coast, but no large orders are expected for eastern lines.

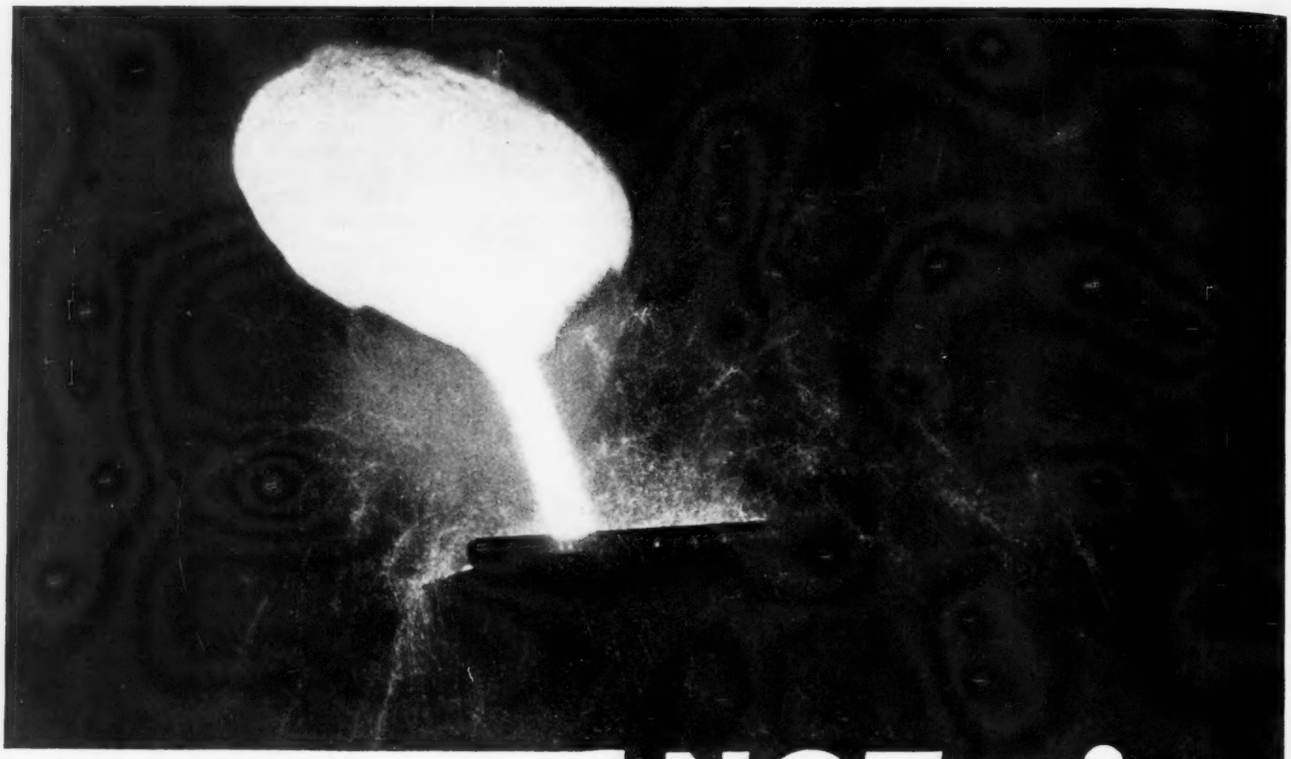
Washington—At $84,788, R. D. Wood & Co. is low on several thousand tons of 6 to 24-inch centrifugal pipe for the suburban sanitary district here.

Buffalo—Demand for first-half pipe deliveries in this district is exceptionally good for both water and gas construction. Several thousand tons of municipal business is in prospect for water line extensions.

Chicago—Award of the 10,000 tons of 20-inch steel pipe for the 85 miles from Geneseo to Rockford, Ill., which eventually will be a unit of the extension of the Texas-Chicago line to Milwaukee, again has been deferred. Order will be placed in about a week. The 700-mile 10-inch line, 52,500 tons, from Glenpool, Okla., to Woods River, Ill., still is pending for the Ajax Pipe Line Co. Hamilton, O., has awarded 250 tons of 4 and 12-inch cast, and South Milwaukee, Wis. is taking bids on 1000 tons of 24-inch. Cast prices are nominal at $40 to $43, Chicago.

Birmingham, Ala.—Several specifications are in sight and bids are out

A Penny Saved is a Penny Earned?



NOT always !

A small addition of charcoal pig iron in your castings pays bigger dividends in the long run.

Which would you rather buy—castings that are likely to break down under unforeseen strains, often making costly replacements necessary, or castings that you are certain will be tougher, stronger, denser, more uniform, and easier to machine than usual?

You want the latter kind, of course. How can you get them? Easily. Merely tell your foundry, when you order castings, to include a small percentage of charcoal pig iron in the mix.

You'd be willing to pay a trifle more for castings that were absolutely dependable, longer wearing, free from defects, and turned out a better finished product. Here's a case where a penny *spent* is *more* than a penny earned.

YOUR CASTINGS *made with Charcoal Pig Iron have* GREATER DENSITY · ADDED TOUGHNESS · MORE STRENGTH · LESS SHRINKAGE · LESS SCRAP LOSS · GREATER UNIFORMITY · EASIER MACHINABILITY . . . *and you get higher quality finished products.*

When you order castings, include in your specifications "all castings to contain at least 15% to 20% Superior Charcoal Pig Iron".

SUPERIOR CHARCOAL IRON COMPANY
Grand Rapids, Mich.

Debevoise-Anderson Co., Inc., *Eastern Representative*
New York · Boston · Philadelphia

Superior Charcoal Pig Iron

on a little tonnage which will add to backlogs for winter delivery.

Cast Pipe Placed

600 tons, 4-inch, Public Service Corp. of New Jersey, to United States Pipe & Foundry Co., East Burlington, N. J.; about equal tonnage of 6-inch to another New Jersey foundry.

450 tons, 24-inch, class A, sewer, New Rochelle, N. Y., to Donaldson Iron Works, Emaus, Pa.; Frank Nardone Co., contractor.

345 tons, 8 and 12-inch, Kennebec, Me., to United States Pipe & Foundry Co., East Burlington, N. J.

250 tons, 4 to 12-inch, Hamilton, O., awarded through contractor to unstated foundry.

145 tons, 14-inch, sand spun, sewer, section J, Mamaroneck project, Westchester county sanitary sewer commission, White Plains, N. Y., to R. D. Wood & Co., Florence, N. J.

100 tons, 16 and 20-inch, filtration plant, Flushing, Queens (New York), to Warren Foundry & Pipe Co., Phillipsburg, N. J.

Unstated tonnage, 8200 feet, 10 and 12-inch wrought iron pipe, Panama Canal, to Charles F. Guyon Inc., $27,968.60 and 4100 feet, 6 and 8-inch, to A. M. Byers Co., Pittsburgh, $9518.04; opening of Nov. 17.

Cast Pipe Pending

3000 tons, 6 to 24-inch, centrifugal, Washington Suburban Sanitary commission, Washington, R. D. Wood & Co., Florence, N. J., low on total bid of $84,788.

1950 tons, 6 to 16-inch, class B, Pasadena, Calif.; bids opened.

1037 tons, 2 to 8-inch class 250 or B, Oakland, Calif.; bids opened.

1000 tons, 24-inch pipe, South Milwaukee, Wis.; bids soon.

900 tons, mostly 16 to 24-inch, sewers, Westchester county, N. Y., bids in. Plans involve 2500 tons additional by Jan. 1.

420 tons, 8-inch, Poughkeepsie, N. Y., Arlington water district; bids Dec. 8 on bell and spigot and universal.

400 tons, water line, West Albany, N. Y., project, additional section.

175 tons, 8-inch, Fort Meade, Md., also 16 gate valves, bids Dec. 8.

175 tons, 6 and 8-inch, for a Maine municipality.

125 tons, 4 and 6-inch class 150, Brea, Calif.; bids opened.

125 tons, 8-inch, Ardsley, N. Y., revived.

Unstated tonnage, 2210 feet 12-inch and 1163 6-inch, Erie, Pa., water commission; plans approved.

Unstated tonnage, 1200 feet, small sizes, Washington, Lynchburg Foundry Co., Lynchburg, Va., low.

Steel Pipe Pending

52,500 tons, 10-inch line, 700 miles from Glenpool, Okla., to Woods River, Ill., for Ajax Pipe Line Co. of New Jersey, previously reported for Standard Oil Co. subsidiary.

1500 tons, 16-inch gas pipe, for Niagara Hudson Power Co., New York.

Unstated tonnage, 5000 feet, 6 and 8-inch, lap-welded steel pipe, department water supply, gas and electricity, New York; also steel and wrought iron, black and galvanized, first quarter requirements for most city departments, approximately 23,000 feet, up to 3-inch, but mostly in smaller sizes, also steel, iron and brass fittings; bids Dec. 11.

Wire

Jobber Preferential Supplanted by New Classification of Carlots —Prices Also Advanced

WIRE PRICES, PAGE 59

Pittsburgh — Price advances on several wire products and a new system of merchandising have been announced by producers, effective immediately and applying on first quarter business.

The former differential of $2 a ton between orders for jobbers and dealers has been eliminated through the introduction of a straight carload price with differentials for mixed, joint, pool, and less carloads. Standard wire nails have been advanced from $1.90 to $1.95 for carload lots. Mixed carloads are priced at $2.05, joint carloads at $2.05, pool carloads at $2.20 and less carloads at $2.35. These prices apply regardless of whether the buyer is a jobber or dealer. Cement coated nails and galvanized barbed wire also have been advanced $1 a ton while galvanized fence staples and polished fence staples are up $3 a ton. Annealed fence wire and galvanized wire are unchanged at 2.35c and 2.80c, respectively, while plain wire continues 2.20c. Wire rods have been advanced $2 a ton to $37, Pittsburgh.

The usual differentials for other producing points over Pittsburgh base will be continued. Specifications against existing contracts are to be received by Dec. 31 for shipment not later than Jan. 15. Business recently has been quiet and unchanged. No improvement is noted in orders for manufacturers' wire while jobbers also are restricting their purchases. Heavier orders for January shipment are looked for over the next several weeks.

Worcester, Mass.—The full effect of the usual November-December decline is being felt in wire production figures and one plant, taking annual inventory, has suspended production for several days, bringing output to the lowest figures of the year.

Cleveland—Announcement is being made of a sweeping change in wire and nail quotations, entailing not only base price revisions but also shipping classifications. Changes are to be effective for first quarter, 1932, and carry $1 a ton advance on nails to $1.95 a keg in carload lots, higher on small purchases; an unchanged base of 2.20c, mill, on manufacturers' wire and $2 a ton advance on wire rods to $37 a ton. Current business has been slow, handicapped in large measure by inventory delays among customers.

Chicago—Western wire mills announce advances for first quarter of $1 a ton on plain wire and virtually all merchant wire products. The advances affect wire nails, staples, and barbed and galvanized wire. A new classification of carloads has been adopted, supplanting the former jobber differential. Wire rods are advanced $2. Quiet specifications are expected this month, but mills expect to build up stocks with heavier production shortly after the first of the year. Sentiment has improved in the South. Jobbers and dealers have low stocks.

Bolt, Nut, Rivet Demand Lacks Definite Trend

Bolts, Nuts, Rivets Prices, Page 59

Pittsburgh—Occasional gains are noted in specifications for bolts, nuts and rivets but general demand lacks a definite trend. The inventory-taking period is expected to prevent any material improvement in demand this month. No change is looked for in first quarter prices although contracts have not yet been issued. The market on bolts and nuts is 73, 10 and 10 off to the larger buyers although the official price has not been reduced from 73 and 10 off. Large rivets continue at 2.25c.

Chicago—Quotations of 73, 10 and 10 for carriage and machine bolts and nuts have become general. Little contracting is being done except for rivets and stove bolts. Specifications are slow, but some improvement in farm equipment orders is noted.

Want Scrap Export Body

Boston chapter of the Institute of Scrap Iron and Steel Inc., New York, has requested Benjamin Schwartz, director-general of the institute, to call a conference after Jan. 1 of all scrap dealers interested in the export of scrap, for the purpose of considering the formation of an export association under the Webb-Pomerene law.

Prescott Iron Works, Seattle, has reduced its capitalization from $200,000 to $165,000.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$17.00
Pittsburgh, dist. fur.	17.00
Pittsburgh, delivered	17.63 to 18.13
Valley furnace	16.00 to 16.50
Cleveland fur., local del.	17.00
Philadelphia, delivered	15.51 to 16.01
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.15 to 19.90
Buff., all-rail, Newark	17.53 to 18.28
Ala., Bir. fur., local del.	12.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.00 to 16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	16.01to 16.51

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	16.51 to 17.01

MALLEABLE

Valley furnace	16.50
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.00
Pittsburgh, delivered	17.63 to 18.13
Chicago, furnace	17.00
Buffalo fur., local del.	17.50
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.50 to 16.00
Pittsburgh, delivered	16.13 to 17.13
Eastern Penn., del.	16.00 to 16.50
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	23.50
Valley, furnace	15.00 to 15.50

BESSEMER

Valley furnace	16.50
Pittsburgh, delivered	17.63 to 18.13
Pittsburgh, furnace	17.00

LOW PHOS.

Valley fur., standard	2700
Philadelphia, standard	23.76 to 26 79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	16.00
Pittsburgh district fur.	16.50
Pittsburgh, delivered	17.13 to 17.63

CHARCOAL

Lake Superior, del. Chi. .... 20.04 to 23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$19; 7—$19.50; 8—$19.00 to $21.00; 9—$20.50; 10—$21; 11—$22; 12—$23; 13—$25.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$31; 16—$33.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.35 to 2.40
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports	
Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	(nom) 10.00
North African low phos.	8.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.50
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$11.00 to 11.25
Chrome ore, 48% net ton c.i.f.	$19.50 to 20.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 cents
South African, 52%	24 to 26 cents
South African, 49-51%	23 to 24 cents
South African, 44-47%	22.50 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$40.00
Missouri	37.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 35.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2¼	$65.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$45.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Balt. base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00
Pittsburgh, bessemer	29.00
Youngstown	29.00
Cleveland	29.00
Philadelphia	34.30
Chicago	30.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00
Forging, Philadelphia	39.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00

SLABS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00

WIRE RODS

Pittsburgh, Cleveland	35.00 to 37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do. less carload	88.50
Do. 75 per cent	130.00 to 150.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb., con. del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb., contained	3.15 to 3.40
Ferro-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	160.00
For 1932 contracts, f.o.b. freight allowed	140.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent, per lb.	$1.00
Cal. Molybdate, lb. cont.	.85

†Carloads. Differentials apply to quant.
*To users of carloads to 500 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky, Illinois mines, net ton	$13.00
Washed gravel, import duty paid east, tide, gross ton	18.50

AMERICAN

STEEL SHEETS *for* AMERICAN SHEET AND TIN PLATE COMPANY PITTSBURGH TRADE MARK REG. U. S. PAT. OFF. EVERY PURPOSE

KEYSTONE Copper Steel

Scientifically Developed to Resist Corrosion

KEYSTONE is the *original* copper steel—the *first* to be so alloyed and branded. This material has an acknowledged reputation for giving enduring service at a proper cost.

AMERICAN

Black Sheets
Galvanized Sheets
Electrical Sheets
Cold Rolled Sheets
Automobile Sheets
Enameling Sheets
Stove and Range Sheets
Galvannealed Sheets
Heavily Coated Sheets
Formed Roofing Products
Sheets for Special Purposes
Tin and Terne Plates

USS

STAINLESS AND HEAT-RESISTING STEEL SHEETS AND LIGHT PLATES

KEYSTONE COPPER STEEL AMERICAN SHEET AND TIN PLATE COMPANY PITTSBURGH TRADE MARK REG. U.S. PAT. OFF.

KEYSTONE is being used in enormous quantities by government and state highway departments for culverts; by mining and irrigation engineers for flumes; by construction engineers for bridges and buildings; by railroads for cars, train-sheds, tie-plates and similar uses; and by builders and contractors for more lasting construction.

American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL AND WIRE COMPANY
CARNEGIE STEEL COMPANY

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES.

COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
ILLINOIS STEEL COMPANY

USS STEEL

FEDERAL SHIPB'LDG. & DRY DOCK CO.
MINNESOTA STEEL COMPANY
NATIONAL TUBE COMPANY

OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & RAILROAD CO.
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Russ Bldg., San Francisco, Calif.

Export Distributors—United States Steel Products Company, 30 Church St., New York, N. Y.

Pig Iron

More Inquiries for First Quarter —Current Business Moderate— Shipments Are Lighter

PIG IRON PRICES, PAGE 70

Pittsburgh—Pig iron buyers show little interest in January or first-quarter requirements. Inquiry is almost entirely lacking and orders are made up of small lots for immediate requirements. Curtailment of stocks is expected to be continued over the remainder of this month. Shipments show no improvement over the rate a month ago. Prices are unchanged.

Boston—Pig iron sales are light, New England foundries buying close to needs. Prices, although not tested by attractive business, are none too firm. From $18.50 to $19, delivered, has been done, although quotations are nominally unchanged.

A cargo of Dutch iron is reported due in New England this month, part of which is sold.

New York—Better inquiries for first quarter are noted, three being for a total of 2500 tons. The tendency of melters is to delay shipments until after inventory. Recent sales total 3000 tons. Prices are unchanged, with Buffalo iron at $14.25 to $15, furnace, for delivery to this district, and eastern Pennsylvania iron holding at about the same equivalent spread. Southern iron is $11, furnace, or $16.50, delivered local docks.

Philadelphia—Dullness in the pig iron market here is expected to continue until after inventory. Prices are steady.

Buffalo—Eastern buyers are out of the market or are seeking prices which Buffalo producers will not meet. District inquiry is small. Four furnaces are making iron this week, one of these being on merchant iron, two on basic and one on a special grade.

Youngstown, O.—Valley pig iron producers were somewhat surprised to learn that the Shenango Furnace Co. relighted one of its stacks at Sharpsville, Pa., Dec. 1, evidently for a winter run. The local market is just as dull as it has been for weeks. Some carload shipments of malleable and No. 2 foundry are made occasionally. Bessemer and malleable bring $16.50, valley; basic, $15; No. 2 foundry, $16; and gray forge and No. 3 foundry, $15.50.

Cleveland—Sales do not appear to be making new headway, but are holding at the same level as for several weeks. A lake furnace booked 4500 tons in the past week, covering melters' requirements in several states. In Cleveland the market is dull, pig iron sellers estimating that foundry capacity here is not engaged more than one day a week. Orders from outside which Cleveland furnaces can take are relatively small, and from $15 to $15.50, base, furnace, must be done to compete with other lake furnaces selling at $16 to $17, base. In Cleveland the market is nominally $17, base, furnace. A little more inquiry is developing for delivery early next year

Cincinnati—Pig iron sales during the past week totaled more than 1000 tons. An inquiry for 500 to 1000 tons of northern iron is pending. Prices are steady.

Chicago — Influenced by large stocks on docks at Chicago and Milwaukee, charcoal iron prices have developed easiness, several small sales having been made on the basis of $20, Lake Superior furnace. More orders are being added to first quarter books of merchant furnaces in this district, several larger buyers having covered in the last few days on the basis of $17, Chicago furnace. It appears December deliveries from furnaces will be light.

Automotive foundries are asking for heavier shipments of silvery iron, but in general pig iron shipping instructions are about 15 per cent under November.

St. Louis—A few inquiries for first quarter are noted. Consumption of basic iron in November dropped to the lowest point in recent years, but four open-hearth furnaces now are operating compared with one at the quietest period in November. Several implement plants are starting part-time operations, including the John Deere Tractor Co., which beginning Dec. 7 will have its plant at Waterloo, Iowa, busy two days a week. Malleable demand is a little better due to heavier specifications from the automotive industry.

Birmingham, Ala.—All purchases are small and for immediate delivery. Production is being held down.

Toronto, Ont.—New business in the merchant pig iron market is holding up fairly well, sales in the past week amounting to 600 tons. Production is increasing gradually.

Imports of iron and steel products into British Malaya in seven months of 1931 declined 40 per cent in value from the corresponding period of 1930.

Ferrotitanium Price Reduced $10 Per Ton

Ferroalloy Prices, Page 70

New York—Announcement is expected shortly on new contract prices for ferromanganese. Meanwhile, market is $85, duty paid, for material in carlots. Domestic spiegeleisen, 19 to 21 per cent, is $30, furnace, and foreign spiegeleisen, 26 to 28 per cent, is nominally $31.50, duty paid. Specifications are light. A leading producer has opened books for 1932 contracts on ferrotitanium at $140 a net ton, f.o.b. producer's plants, freight allowed in carlots. This is a reduction of $10 a ton from the contract price for the current year.

Pittsburgh—Minor gains in orders and inquiry for special ferroalloys are offset in a measure by continued quietness in ferromanganese and spiegeleisen. Ferromanganese is $89.79, delivered, and spiegeleisen $30, furnace. Ferrotungsten is $1.05 to $1.10.

Chicago—Inquiries for 1932 ferroalloys are being received, and price announcements are expected within the week. Spiegeleisen, 19 to 21 per cent, is holding fairly well at $30, eastern furnace. Part of a cargo shipped here recently has been distributed from the docks.

Operations Year's Lowest

(*Concluded from Page 64*)

this week the 35 per cent rate gives promise of continuing. Four open hearths each are active at Otis, American Steel & Wire and Corrigan, McKinney companies.

Chicago—Two more open-hearth furnaces were added during the week just closed, bringing ingot output to about 24 per cent. Schedule for this week also is expected to be 24 per cent. Nine of the district's 36 steelworks blast furnaces are active. Rail mill operations continue at 20 to 25 per cent. Bar mill departments are leading with 30 per cent.

Birmingham, Ala.—Ingot production was at 30 per cent capacity last week with prospects of the same rate this week. Six and seven open-hearth furnaces at Fairfield, Ala., of nine have been in operation and three of six of Gulf States Steel at Gadsden, Ala., are working. Rail mills are being surveyed for operation early next month.

Scrap

Small Movement as Melters Buy Little and Embargo Shipments —Some Prices Drop Further

Chicago—Further restrictions on shipments of steelmaking grades imposed by the leading independent melter have helped develop a quiet scrap market. Shipments to South Chicago and Gary are proceeding at the recent volume. Larger brokers are refusing to sell heavy melting steel at $8, and the price is tending toward a minimum of $8.25. Much less scrap has been accumulated at points of collection and sorting than a year ago. The car wrecking programs of several scrap dealers, totaling 15,000 to 20,000 cars, are proceeding slowly and have no effect on the market. Cast borings remain relatively high. Several sales of rail ends have been closed.

Boston—Prices on most grades of scrap for outside shipment are too

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.50 to 8.50
Boston, dealers	4.50 to 5.00
Buffalo, No. 1	8.50 to 9.00
Buffalo, No. 2	7.00 to 7.50
Chicago	7.50 to 8.00
Cinci., deal.	7.25 to 7.75
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	6.00 to 6.50
Det., No. 2 deal.	4.50 to 5.00
E. Pa. del. mill	7.25 to 8.50
N. Y. deal. R. R.	5.50 to 6.00
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	8.00 to 8.20
Federal, Ill.	7.00 to 7.50
Granite City, Ill.	7.00 to 7.50
Valleys, No. 1	9.25 to 9.75

COMPRESSED SHEETS

Buffalo, dealers	7.00 to 7.50
Chi. (Factory)	6.50 to 7.00
Cleveland	7.00 to 7.25
Detroit, dealers	6.00 to 6.50
E. Pa. new mat.	7.00 to 8.00
Pittsburgh	9.75 to 10.25
Valleys	8.50 to 9.00

BUNDLED SHEETS

Buffalo	6.50 to 7.00
Cinci. deal.	6.75 to 7.25
Cleveland	6.00 to 6.50
Eastern Pa.	6.00 to 6.50
Pittsburgh	9.25 to 9.75
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	4.00 to 4.50
Detroit, dealers	3.75 to 4.25
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	10.00 to 11.00
Boston, dealers	4.50 to 4.75
Buffalo	11.25 to 11.75
Chicago (3 ft.)	8.75 to 9.25
Chicago (2 ft.)	9.75 to 10.25
Cinci., deal.	12.00 to 12.50
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.50 to 13.00
St. Louis	11.50 to 12.00

STOVE PLATE

Birmingham	7.00 to 7.50
Boston, con.	4.50 to 5.00
Buffalo	8.50 to 8.75
Chicago, net	7.00 to 7.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.00 to 7.50
N. Y., deal. mill	4.75 to 5.50
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	11.00 to 11.50
Chicago	9.00 to 9.50
Eastern Pa.	10.50 to 11.00
Pittsburgh	10.75 to 11.25
St. Louis	8.50 to 9.00

ANGLE BARS—STEEL

Chicago	8.75 to 9.25
St. Louis	7.50 to 8.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	12.00 to 12.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	12.00 to 13.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts. sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	8.00 to 8.50
St. Louis	8.50 to 9.00

SHOVELING STEEL

Chicago	7.50 to 8.00
Cleveland	6.25 to 6.50
St. Louis	7.00 to 7.50

RAILROAD WROUGHT

Birmingham	7.00 to 7.25
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.00 to 7.50
Buffalo, No. 2	9.00 to 9.50
Chicago, No. 1	8.00 to 8.40
Chicago, No. 2	7.50 to 8.00
Cinci., No. 2	7.25 to 7.75
Eastern Pa.	9.50
N. Y., No. 1, deal.	7.00 to 7.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	5.00 to 5.50
St. Louis, No. 2	7.00 to 7.50

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	9.50 to 10.00
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	7.00 to 7.50
Chicago, No. 1	6.50 to 7.00
Cinn., No. 1 dl.	5.50 to 6.00
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	5.75 to 6.00
Det., No. 1 new deal.	5.00 to 5.50
St. L., No. 1	6.00 to 6.50
Val. new No. 1	8.75 to 9.25

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	1.35 to 1.50
Buffalo	4.75 to 5.25
Chicago	4.00 to 4.50
Cinn., deal.	3.75 to 4.25
Cleveland	5.00 to 5.50
Detroit	3.50 to 4.00
Eastern Pa.	5.00 to 5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.00 to 7.50
St. Louis	3.00 to 3.50
Valleys	6.75 to 7.25

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	1.30 to 1.50
Buffalo	6.50 to 7.00
Cinn., deal.	3.75 to 4.25
Cleveland	5.25 to 5.75
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.00 to 7.25

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	6.50 to 7.25
Boston, deal.	1.50 to 1.75
Buffalo	6.00 to 6.50
Chicago	4.00 to 4.50
Cinn., deal.	3.75 to 4.25
Cleveland	5.25 to 5.75
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.50
E. Pa., chem.	10.50 to 12.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.00 to 7.25
St. Louis	5.50 to 6.00

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	5.75 to 6.25
Cincinnati	5.00 to 5.50
Eastern Pa.	7.00 to 7.50
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	7.00 to 7.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.00 to 5.50

FORGE SCRAP

Boston, del.	2.00 to 2.25
Chicago	10.50 to 11.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	8.50 to 9.00
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	7.50 to 8.00
Chi., steelworks	6.50 to 7.00
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00 to 8.00
Pittsburgh	9.25 to 9.75
St. Louis	6.50 to 7.00

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 12.00
Buffalo	12.00 to 12.50
Chicago	12.90 to 13.45
Eastern Pa.	15.50 to 16.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	8.40 to 8.95
N. Y., deal.	9.00 to 9.50
St. Louis	9.00 to 9.50
E. Penna.	15.00 to 15.50

CAR WHEELS

Birming. iron	8.00 to 9.00
Boston, iron	12.50 to 13.50
Buffalo, iron	10.00 to 10.50
Buffalo, steel	10.50 to 11.00
Chicago, iron	9.00 to 9.50
Chi. rolled steel	9.00 to 9.50
Cincinnati, iron	9.50 to 10.00
E. Pa. steel	10.00 to 10.50
E. Pa. iron	11.00 to 11.50
Pitts. iron	10.00 to 10.50
Pitts., steel	11.00 to 11.50
St. Louis, iron	7.00 to 7.50
St. Louis, steel	7.50 to 8.00

NO. 1 CAST SCRAP

Birmingham	8.50 to 9.00
Buffalo (mach.)	10.25 to 10.75
Boston, textile	7.00 to 8.50
Chicago, mach.	9.00 to 9.50
Chi., railroad	8.10 to 8.70
Chicago, agri.	7.60 to 8.10
Cinn., mach. cup., gross	11.00 to 11.50
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa., cupola	11.50
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	12.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	8.50 to 9.00
St. L., No. 1	7.50 to 8.00

HEAVY CAST

Boston	6.00 to 6.50
Bost. mach. cast	8.00 to 9.00
Buffalo, break	6.75 to 7.25
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	5.00 to 5.50
Eastern Pa.	9.00 to 9.50
N. Y. break, dl.	5.75 to 6.00
N. Y No. 1 dl.	7.00 to 7.50
Pittsburgh	8.00 to 8.75

MALLEABLE

Boston R. R.	11.50 to 12.00
Buffalo	10.00 to 10.50
Chicago, agri.	7.50 to 8.00
Chicago, R. R.	8.00 to 8.50
Cinci., R. R. del.	9.25 to 9.75
Cinci., agri. del.	9.00 to 9.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.50 to 10.00
St. Louis, rail	6.00 to 6.50

RAILS FOR ROLLING
5 feet and over

Birmingham	10.00 to 10.50
Boston, deal.	6.00 to 7.00
Buffalo	9.75 to 10.25
Chicago	10.00 to 10.50
Eastern Pa.	11.50 to 12.00
New York	6.25 to 6.75
St. Louis	10.00 to 10.50

LOCOMOTIVE TIRES

Chicago, cut	10.50 to 11.00
St. L., No. 1	9.00 to 9.50

LOW PHOS. PUNCHINGS

Chicago	11.25 to 11.75
Buffalo	12.00 to 12.50
Eastern Pa.	13.00
Pittsburgh	12.50 to 13.00

On Your Job

WHAT do you need in your job—exceptional forming qualities, higher finish or a coating that stands the gaff of fabricating without damage? Every job has its particular problems. And the Granite City Steel Company provides a classification of steel to meet these various needs—better. Through 53 years of service in hundreds of different uses and through constant and rigid laboratory test, the Granite City Steel Company is able to offer quality and performance standards that invite the most exacting comparison. And the location of the Granite City Steel Company, just 20 minutes from Saint Louis, served by 29 railroads and the Mississippi River, assures better service to the Mississippi Valley, the West and the Southwest.

Chicago, Dallas
Kansas City
Los Angeles

SINCE
REG. U.S. PAT. OFF.
GRANITE CITY STEEL
1878

St. Louis, St. Paul
San Francisco
Salt Lake City

GALVANIZED SHEETS
STEEL SHEETS
PLATES AND
TIN PLATE

•

GRANITE CITY STEEL CO
GRANITE CITY, ILLINOIS

low to interest sellers, with $3.25 f.o.b. offered for No. 2 steel. Small shipments to New England consumers of heavy breakable cast at $4.60 f.o.b. and textile at $7.50 to $8.50 delivered, have been made. No. 1 steel continues at $7, Central Massachusetts. Buying is generally light. With boring and turning down to $1.30, producers are not interested.

New York—Trading in scrap is almost at a standstill. Prices on some grades are nominal, with nothing moving. On others low prices fail to attract volume. Some No. 1 steel is being bought at $5.50 for barge storage. Most mills are not taking shipments, a few cars of stove plate and machine turnings moving to Phoenixville, Pa.

Buffalo — Scrap movement has dropped to the low point of the year.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Bethlehem is buying small lots of No. 1 heavy melting steel at $8.50 but other consumers are inactive.

Pittsburgh—Operating conditions and seasonal influences continue to restrict mill buying of scrap and in view of the small volume of offerings prices retain a steady tone. Heavy melting steel holds at $10 to $10.50, while $10 is the usual price for both mill purchases and dealer coverage of compressed sheets. Blast furnace material remains at a top price of $7.25 with railroad steel specialties nominal at $11 to $11.50.

Cleveland—With consumers cutting off shipments of iron and steel scrap, movement has slowed almost to the stopping point. One large local works continues occasionally to receive material on its recently placed heavy steel order but it is the only one such.

Youngstown, O. — Compressed sheets have been marked down 25 cents a ton. Practically all grades of heavy steel and some lighter grades have been embargoed by most local mills for shipment in December, although dealers hope this will not extend into the last ten days of this month.

Detroit—With Ford and Chrysler not manufacturing, scrap production has been reduced, although Chevrolet, Buick and Hudson offerings are better. Blast furnace grades still are tending downward. Cast iron borings, short turnings, mixed borings and short shoveling turnings are down 25 cents. Open-hearth grades are firm. In sympathy with the rest of the market, short rails and long steel rails have been cut 50 cents a ton. The latter reductions are nominal.

Cincinnati—Shipments of iron and steel scrap to principal consumers show no improvement. Nearness of inventory-taking has given a dull tone to the market, and quotations on small lot orders are weak. The Norfolk & Western railroad scrap list is current.

Birmingham, Ala.—Heavy melting steel is held at $8.50 for the better grade though indications are consumers make their own price.

St. Louis—While iron and steel scrap prices remain at the low levels of the year sentiment has undergone further moderate improvement. Melters are beginning to consider the market about right for investment. Some tentative inquiries have appeared, and the recent purchase of 5000 tons of steel by an east side mill was evidently to put away for future use, though specifying delivery within 60 days.

Philadelphia—Scrap prices are down on three grades. Forge scrap, on a purchase for Coatesville, Pa., is down to $6.75. Stove plate and grate bars are down on list trading to $7 to $7.50, delivered.

Frankford Arsenal, Pa., closes bids Dec. 21 on 250 tons of steel and iron turnings, 75 tons of wrought iron, steel and other metals.

Toronto, Ont.—Demand for iron and steel scrap broke sharply during the past few days and resulted in a general reduction in sales and shipments. Steel scrap is at a standstill but occasional orders are reported for iron grades. Machinery cast continues to head the list and supplies are limited. Other lines are spotty and no buying is being done except for immediate needs. Dealers are out of the market for most grades and prices are unchanged.

Ludlum Loss Under 1930

Ludlum Steel Corp., Watervliet, N. Y., reports for the quarter ended Sept. 30 net loss of $61,835, compared with net profit of $7130 in the preceding quarter and net loss of $187,673 in the third quarter of last year.

For the 9 months ended Sept. 30 the company reports net loss of $38,347 after taxes and charges. This compares with net loss of $283,095 in the corresponding 9 months of 1930.

Coke

Contracting for 1932 Is Slow—December Shipments in Middle West Down—Prices Steady

COKE PRICES, PAGE 70

Pittsburgh—Colder weather has stimulated demand for domestic coke slightly, while activity in the furnace and foundry grades is quiet and unchanged. Spot orders for furnace coke usually bring $2.35 to $2.40, with the foundry market unchanged at $3.25 to $4.50.

New York—Demand for coke is less active than a week ago. Beehive furnace is unchanged at $2.25 to $2.50, Connellsville, and standard grades of beehive foundry are $3.25 to $3.50, Connellsville, with premium brands $4.50, Latrobe, Pa. By-product foundry coke is $8.70 to $9.10, Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati—Shipments of by-product foundry coke so far this month have been maintained at the November rate. Contracts for the first half have been signed by only a few consumers. Prices are steady.

Chicago—About one-third of the regular by-product coke buyers have contracted for first half requirements on the basis of $7.50, Chicago district ovens. December shipments are declining.

St. Louis—By-product coke producers are holding down output as much as possible, but stocks are increasing, due to slow demand for all grades. Prices are steady.

Birmingham, Ala.—Production is held down to half of normal. Little business has been booked for delivery next year. Foundry coke still is $5, Birmingham.

Pacific Coast

Small Lots Rule in All Products —Court Action Delays Golden Gate Bridge Letting, Perhaps for Months—Some Plate Tonnage Taken for Tank and Pipe Work—Prices Are Maintained

San Francisco—(*By Air Mail*)—Demand for steel products on the Pacific Coast reflects the usual seasonal dullness. Few awards or new inquiries of importance developed during the week. The largest letting involved 1800 tons of plates for six water tanks for Long Beach, Calif., placed with the Western Pipe & Steel Co., while the most important new inquiry calls for 1950 tons of cast iron pipe for Pasadena, Calif. The price has changed little during the past month, though weakness prevails in most lines.

Bars, Plates and Shapes

Concrete bar awards aggregated 700 tons and the total for the year is now about 2500 tons less than for the corresponding period in 1930.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

The largest award went to the Pacific Coast Steel Corp., 300 tons for the Third street bridge, San Francisco. Unnamed interests took 200 tons for a roof for a reservoir in Beverly Hills and 100 tons for an addition to a school in Los Angeles. Among the new inquiries are 110 tons for a library for the Teacher's College in Chico, and 100 tons for a court house in Martinez, Calif. No change has been made in warehouse quotations recently in the Los Angeles and San Francisco districts. Prices in the former territory continue at 2.50c, base, on carload lots, and 2.60c, base, in the latter.

Outside of the award of 1800 tons of plates for water tanks for Long Beach, Calif., lettings were all confined to small lots. Plate prices continue to range between 1.85c and 1.95c, c.i.f.

Structural shape awards were confined to small lots for the most part. The Consolidated Steel Corp. took 155 tons for a school addition in Los Angeles and the Soule Steel Co. booked 100 tons of trusses for freight terminal buildings in the same city. No new inquiries of size developed during the week.

The Supreme Court of California rendered a decision that the Golden Gate Bridge district has the authority to levy taxes for the cost of the bridge, providing tolls do not cover the amount involved. However, opposing interests have filed a bill for injunction and restraining order in the United States district court and it may be several months before awards for this 110,000-ton structure will be formally placed. Plain shapes continue at 2.05c to 2.15c, c.i.f.

Other Finished Material

No awards of importance were reported in the cast iron pipe market. Awards so far this year total 62,149 tons, compared with 73,498 tons for the same period a year ago. Bids have been opened on 1950 tons of 6 to 16-inch pipe for Pasadena, Calif., on 1037 tons of 2 to 8-inch pipe for Oakland, Calif., and on 125 tons of 4 and 6-inch pipe for Brea, Calif. Little of importance has transpired recently in the market for standard steel pipe and line pipe. Stocks of the former material are well rounded out in distributors' warehouses.

Movement of sheets is confined to small carload lots for prompt shipment. Consumers are, apparently, little inclined to anticipate future requirements. No. 24 galvanized sheets are quoted, generally, at 3.38c, c.i.f. Hot-rolled annealed sheets, No. 24 gage, hold at 2.88c and No. 10 blue annealed sheets are quoted at 2.33c, c.i.f.

Seattle Buying Dull

Seattle — Important specifications for iron and steel are lacking in the Pacific Northwest and little improvement is expected for two months. Construction is inactive and public works projects are nearly all federal and state undertakings. Industrial inquiry continues dormant. Many of the jobs projected call for only nominal tonnages of steel.

Pig Iron and Coke

The market is dormant as foundry activity is at the year's lowest level with no prospect of increased operations until early spring. In the meantime raw materials are not in demand and only occasional small tonnages are moving.

Bars, Plates and Shapes

Mill prices are unchanged with insufficient business offering to test their strength. Merchant bars are in poor demand and there is little call for reinforcing materials. However, in recent weeks inquiry for small tonnages of concrete steel bars has increased and dealers are convinced this is a hopeful indication. Both local steel mills are closed until after the holidays. Reinforcing bar awards this week were confined to two small jobs. Northwest Steel Rolling Mills, Seattle, will furnish 100 tons for the Lynn Place separation viaduct, Seattle, and Pacific Coast Steel Corp. has the contract for 65 tons for a state bridge at Wenatchee. General contract has been awarded for the post office at Port Angeles, Wash., involving 100 tons of reinforcing bars.

On its low bid of $10,012, the Birchfield Boiler Co., Tacoma, Wash. has the contract to fabricate 1958 feet of 30-inch steel water pipe, 125 tons, for Tacoma. The same project also involves 3380 feet of 42-inch pipe, which it is expected will go to a Tacoma concrete pipe manufacturer. Award is pending for three oil storage tanks for the Olympia Wood Products Co., Olympia, Wash., tonnage unstated. Goodfellow Bros., Wenatchee, Wash., have the general contract to supply two miles of 28-inch steel pipe for the United Water Co., Wenatchee. Subcontract is pending.

Finished Materials

The wholesale jobbing situation is unchanged. Business is slow and prices unsteady, notwithstanding recent advances on some items. No upturn in demand is expected until after the holidays.

Water district No. 34, King county, through Parker & Hill, engineers, Smith Tower, Seattle, will receive bids Dec. 10 for a water tower and tank, turbine well pump and motor and distribution system 24,000 feet in length. Demand for cast iron pipe is nominal at present as specifications for next year's requirements are not yet available.

Old Material Is Dull

The market is stagnant. Dealers are overstocked and unable to turn stocks into cash. Sellers are anxious to ship but buyers refuse to accept further consignments. With both local mills closed temporarily, prices have no stability and consumption is nominal.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	58	44½	½	23	5
¼	62	50½	¾	28	11
⅜—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+13	+48
¼	60	49½	½	23	7
⅜—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$33.00 to 35.00
Four-inch, Birmingham .... 37.00 to 39.00
Four-inch, Chicago ..... 43.00 to 46.00
Six to 24-inch, Chicago..... 40.00 to 43.00
Six-inch and over, N. Y..... 28.00 to 30.00
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	3.00c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	3.25c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.50c
Los Ang. lcl.	2.80c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl.	2.90c
Seattle	2.50c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.60c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	3.50c
Phila.*† (e)	3.05c
Pitts.**	3.00c to 3.10c
San Fran.	3.65c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.55c
Pitts.**	3.40c
Portland	4.00c
San Fran.	4.15c
Seattle	4.00c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.10c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	4.00c
Detroit	4.00c
Houston	4.25c
Los Ang.	5.10c
New York	4.00c-4.10c
Phila.*† (e)	4.00c
Pitts.**	3.90c
Portland	4.50c
San Fran.	4.65c
Seattle	4.50c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.50c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.50c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

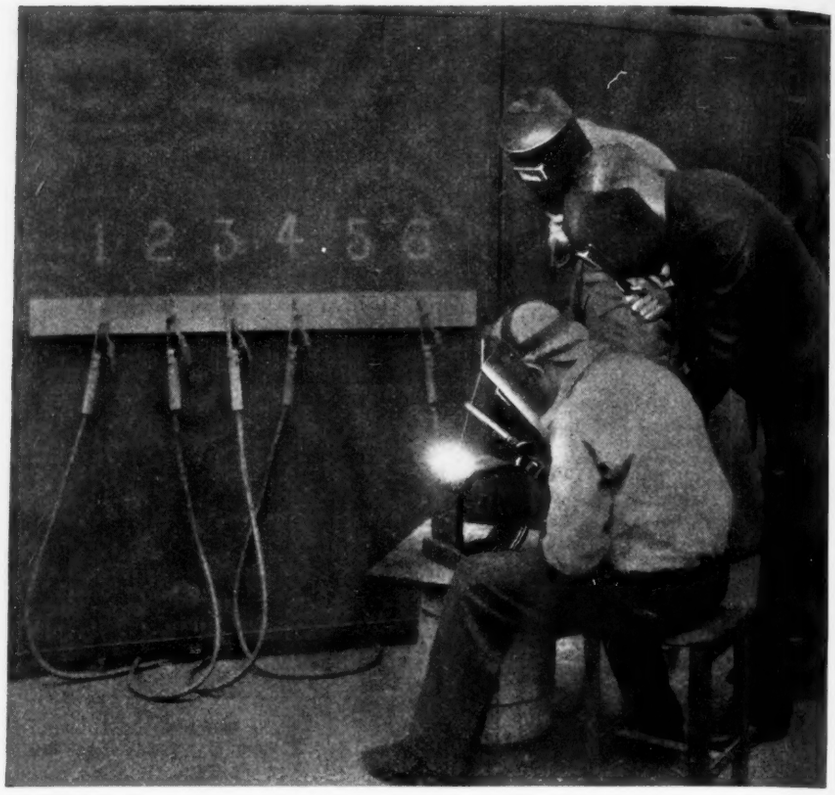
Flats and squares 50c extra, except Tulsa where 5.14c is quoted (a) Rounds, hex. only

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff
(e) New mill classif.
‡Domestic bars.
*Plus quantity extras
**Less than 25 sheets
*†50 or more bundles

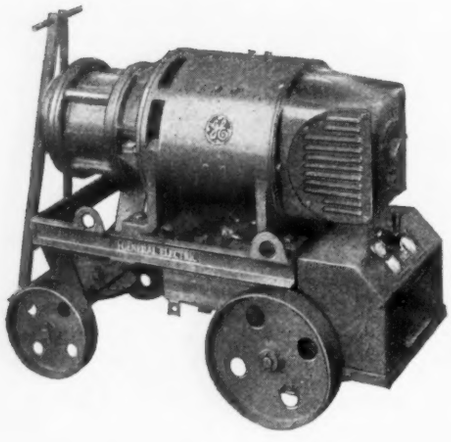
"THE PROOF OF THE PUDDING"



THE NEW G-E ARC WELDER

Combines and excels all the best features of all the good welders now on the market... plus new features all its own.

1. Stable, flexible arc
2. Quick recovery ("pep")
3. Self-excitation
4. Spark-free commutation
5. Simple operation
6. Duplex voltage control
7. Dead-front control panel
8. Large, protected instruments
9. Light, compact, strong construction
10. Low center of gravity
11. A definite purpose for every ounce of material



WE ASKED many skilled operators to try the new G-E arc welder — not only try it, but compare it with five other reputable types of arc-welding sets.

But, in order that trade names, individual preferences, etc., might not influence the operator, the six machines were placed behind a screen and adjusted for identical welding conditions. Unidentified leads were brought out and the operator was given the opportunity to weld from each set of leads with no restriction as to method or time.

As a result of this test, the new G-E arc welder was awarded first place by 75 per cent of the operators, and second place by the other 25 per cent.

This was but one of the many long and exacting tests to which the new welder was subjected before General Electric placed its monogram upon it. This is another reason why we say, "Buy no welder until you have thoroughly investigated through your nearest G-E office."

530-118

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.75c, Conn., for copper

Sheets	
Yellow brass (high)	12.87½
Copper, hot rolled	15.87½
Lead sheets, to jobbers	7.00
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	16.12½
Seamless copper	15.37½
Rods	
Yellow brass (high, full turnings)	10.62½
Naval brass	11.75
Anodes	
Copper untrimmed	13.37½
Wire	
Yellow brass (high)	12.87½

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	3.75 to 4.00
Chicago	3.50 to 3.75
Cleveland	3.75 to 4.25
St. Louis	3.50
Heavy Yellow Brass	
New York	2.25 to 2.50
Heavy Copper and Wire	
New York	4.75 to 5.00
Boston	5.00 to 5.25
Chicago	3.75 to 4.25
Cleveland	3.75 to 4.25
St. Louis	3.75
Composition Brass Borings	
New York	3.75 to 4.00
Yellow Brass Tubing	
Cleveland	2.25 to 2.75
Light Copper	
New York	3.75 to 4.00
Chicago	3.50 to 3.75
Cleveland	3.25 to 3.50
St. Louis	3.50
Light Brass	
Boston	1.75 to 2.00
Chicago	2.00 to 2.25
Cleveland	1.25 to 1.75
St. Louis	2.00
Zinc	
New York	1.00 to 1.25
Cleveland	1.00 to 1.25
St. Louis	1.50
Aluminum	
Clippings, new, soft, Cleve.	11.00 to 11.50
Clippings, hard, Cleveland	7.50 to 8.50
Borings, Cleveland	3.00 to 3.25
Mixed cast, Cleveland	3.75 to 4.25
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	3.50 to 4.00

Secondary Metals

Remelt aluminum No. 12'	8.50 to 9.50
Brass ingots, 85-5-5-5	6.87½

Metals

Renewed Weakness Develops in Copper Market—Lead and Zinc Hold but Tin Eases

New York—Renewed weakness developed in the copper market last week. Prices of other metals held remarkably steady, however, with the exception of tin. Domestic demand for copper was in slightly better volume but other metals continued quiet.

Copper—The custom smelter quotation definitely settled to 6.50c, Connecticut, or a quarter-cent under the asking price of mine producers at mid-week. This followed earlier firmness accompanying the announcement that Union Miniere du Haut Katanga would reduce production in line with plans projected at the recent conference in New York. Copper Exporters Inc. took immediate action on revising marketing rules following withdrawal of Phelps Dodge Corp. and two British producers. Export demand recently has been slow. Copper and low brass products have been reduced a quarter cent, while high-brass products are down an eighth cent.

Lead—Demand was fair last week but less active than in the preceding week, particularly in the East. Buying has been from miscellaneous manufacturers, including paint makers. Battery and cable producers booked little metal. Quotations held unchanged at 3.65c, East St. Louis, and 3.85c, New York.

Zinc—Prices firmed up slightly at the close of the week but in general a quiet situation obtained. Purchasing was confined largely to small lots for early needs. A slight premium was asked for January delivery. Demand for zinc products has not been up to expectations.

Tin—Prices were weak last week with the average level the lowest since 1899 when the metal fell below 20 cents. The decline in sterling exchange and low prices on silver contributed to the weaker situation. Visible supplies increased slightly last month.

Antimony—The market was extremely dull last week with prices fractionally lower.

Silver—Quotations moved downward due to selling for Chinese account in London.

Aluminum—Quotations remained unchanged with sales still in small volume.

By-Products Are More Active; Prices Firm

New York—Some distributors are behind on toluol shipments due to restricted output. Current consumption of solvent naphtha, benzol and xylol is about even with production. Current prices are firm, and an announcement for early 1932 is expected this week. Contracting in naphthalene is slightly more active. Imports at New York last week approached 5000 bags. Phenol demand and prices are unchanged, while sulphate of amomnia is weak on limited volume.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10 to $1.20

Quicksilver Sales Small

New York—Quicksilver is $68 to $70 a virgin flask of 76 pounds. Some business has been done lately, but orders are restricted to small lots.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
November 28	6.75	6.87½	6.12½	22.00	22.25	3.85	3.65	3.12½	22.90	6.62½	35.00
November 30	6.75	6.87½	6.50	21.50	21.80	3.85	3.65	3.12½	22.90	6.62½	35.00
December 1	6.62½	6.87½	6.37½	21.00	21.45	3.85	3.65	3.12½	22.90	6.50	35.00
December 2	6.50	6.87½	6.25	21.12½	21.65	3.85	3.65	3.12½	22.90	6.50	35.00
December 3	6.50	6.87½	6.25	21.00	21.45	3.85	3.65	3.15	22.90	6.50	35.00
December 4	6.50	6.87½	6.25	21.00	21.45	3.85	3.65	3.15	22.90	6.25	35.00

Europe

Steady Market Expected for Remainder of Year—Continent Feels Strong Competition

London—(*By Radio*)—Tariff duties on iron and steel products seem improbable until a definite plan has been evolved, probably early in 1932. No change in prices of pig iron is expected before the end of the year. Middlesbrough pig iron trade is expanding and stocks are being liquidated. Indian iron is competing actively with hematite.

Finished steel in the northeastern district is in better demand but important Continental deliveries to Middlesbrough and South Wales are being made. Steelworks in the Barrow area are inactive. Tin plate is making slow progress but galvanized sheets are dull.

From Paris comes report of serious decline in output as foreign competition increases. Belgian markets are weak under strong German competition. Berlin reports substantial orders for British delivery but domestic buying is low.

Krupps, Mannesmann and the United Steel Corp. are forming a concern to control the Rhein-Westphalian steel output.

British Steel Market Awaits Tariff Results

Birmingham, Eng.—Markets are under a cloud of uncertainty and until it is known exactly what the dumping duties will be there can be no free flow of business. Certain it is that in a few days an import duty will have been imposed upon a number of products, among them foreign iron and steel.

Meanwhile, thousands of tons of steel are lying in South Wales, a large proportion of which has come in since the threat of tariffs. This steel will find its way to other parts of the country, so that whatever duty is imposed cheap foreign steel will be available for some time.

Works in the Midlands which take supplies of Continental material are now avoiding fresh commitments until more is known of the position in regard to tariffs. Merchants in this area have little business on books. In South Wales there is general commendation of the government's policy and the belief is held that with an increased demand for British goods costs can be kept down so as to obviate any increase in price of home manufactured products.

The weakest market is undoubtedly galvanized sheets. The quotation is £9 5s ($34.78), which was fairly general, is regarded as a weak figure and sellers who have quoted at that price have found themselves losing business because some concerns were willing to accept £9 ($33.84) for 24 gage. A fair number of orders, mostly for small lots, is being taken and export merchants are getting inquiries from sources which have not been heard of for some time. The rate of operation is very low.

See Improvement in Tin Plate

In the Welsh tin plate trade business remains fairly steady at 14s ($2.63) to 14s 3d ($2.67) per base box and some good inquiries are being received. There is plenty of room for improvement but manufacturers are hopeful that definite advance will be made by the next year. Tin plate shipments from Swansea were down on the week by some 53,000 boxes.

Development of the Midland pig iron industry is proceeding along slow but steady lines. Heavy bookings were made a month ago and specifications are coming in regularly. Caution is displayed in new business as furnacemen have in mind the possibility of an increase in production costs.

The large number of furnaces in blast since the beginning of this month has brought heavier demand on coke ovens and there is now a definite increase in the price of best Yorkshire furnace coke for which is demanded 12s 6d ($2.35) a ton at the ovens. When furnacemen made contracts a short while ago they could buy it at 11s ($2.06) and less. This enabled them to keep down the price of pig iron as they hoped thereby to encourage business. The higher cost of fuel, however, is bound to tell on the weekly production bill

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Dec. 3

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	£ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$9.92	2 18 6	$10.45 to $11.18	2 3 0 to 2 6 0
Basic bessemer	9.49	2 16 0*	9.72 to 10.21	2 0 0 to 2 2 0
Hematite, Phos. .03-.05	11.02	3 5 0	.....	.....
SEMIFINISHED STEEL				
Billets	$18.22	5 7 6	$12.64 to $12.88	2 12 0 to 2 13 0
Wire rods, No. 5 gage	28.82	8 10 0	24.30 to 25.52	5 0 0 to 5 5 0
FINISHED STEEL				
Standard rails	$27.97	8 5 0	$28.55	5 17 6
Merchant bars	.75c	7 0 0	.63c to .64c	2 17 0 to 2 18 0
Structural shapes	.83c	7 15 0	.62c to .63c	2 16 0 to 2 17 0
Plates, †¼-in. or 5mm.	.88c	8 5 0	.77c to .78c	3 10 0 to 3 11 0
Sheets, black, 24 gage or 0.5 mm.	.94c	8 15 0	1.57c to 1.62c	7 2 6 to 7 7 6
Sheets, gal., 24 gage, corr.	.99c	9 5 0	1.76c to 1.79c	8 0 0 to 8 2 6
Bands and strips	1.02c	9 10 0	.83c	3 15 0
Plain wire, base	.91c	8 10 0	1.16c	5 5 0
Galvanized wire, base	1.18c	11 0 0	1.36c	6 3 9
Wire nails, base	1.18c	11 0 0	1.17c	5 6 3
Tin plate, box 108 lbs.	$ 2.42	0 14 3	$3.20	0 13 2‡

British ferromanganese $80 to $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Renten Marks	
Fdy. pig iron, Si. 2.5	$9.92	2 18 6	$10.00	255(2)	$11.12	400	$18.55	78
Basic bessemer pig iron	9.49	2 16 0*			10.43	375	20.33	85.50
Furnace coke	2.12	0 12 6	5.68	145	4.45	160	5.09	21.40
Billets	18.22	5 7 6	16.46	420	14.04	505	26.28	110.50
Standard rails	.88c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	.75c	7 0 0	.90c	500	.70c	535	1.38c	128
Structural shapes	.94c	8 15 0	.99c	550	.69c	530	1.35c	125
Plates, †¼-in. or 5mm.	.96c	9 9 0	1.17c	650	.85c	655	1.67c	154.50
Sheets, black, 24 ga. or 0.5mm.	.94c	8 15 0	1.84c	1,020	1.73c	1,330	2.75c	255
Sheets, galv., corr., 24 ga. or 0.5mm	.99c	9 5 0	2.39c	1,325	1.95c	1,500	4.43c	410
Plain wire	.91c	8 10 0	1.68c	935	1.95c	1,500	2.24c	207
Bands and strips	1.02c	9 10 0	1.13c	625	.92c	710	1.60c	148

*Basic. †British ship-plates, Continental bridge plates. ‡German.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

BLISS

ROLLING MILL EQUIPMENT
FOR
HOT OR COLD ROLLING

MILLS

MILL REELS

COILERS

SLITTERS

WINDING REELS

LEVELING MACHINES

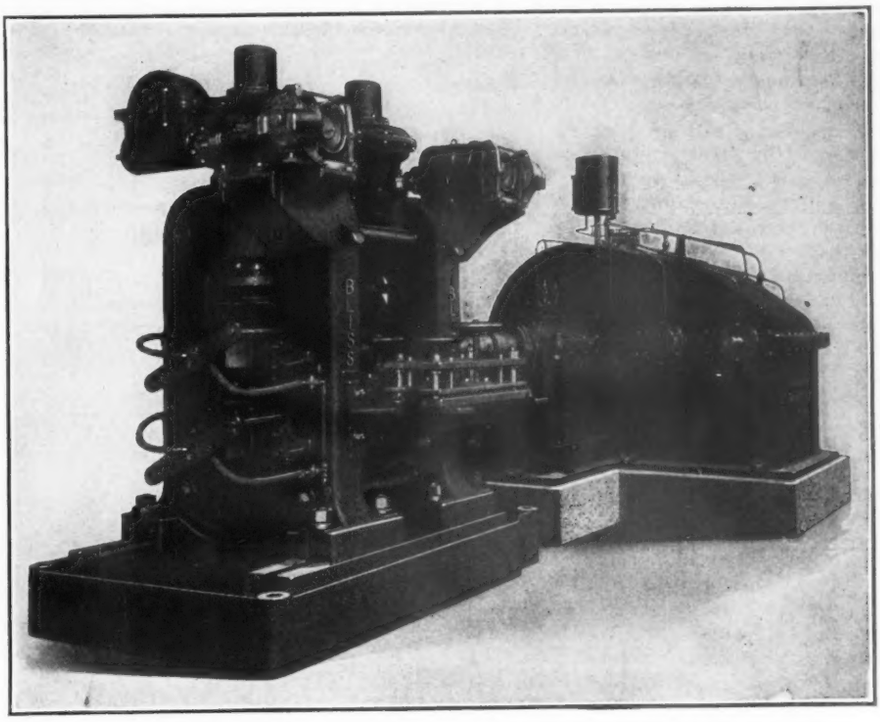
SHEARS

RECOILING MACHINES

SCRAP-BAILING MACHINES

ETC.

ETC.



BLISS TWO-HIGH MILLS
ROLLER-BEARING EQUIPPED

These mills are built in all sizes and roller-bearing equipped throughout.

Full details on request.

BLISS *for* MACHINERY

E. W. BLISS CO., BROOKLYN, N. Y., U. S. A.

Factories: BROOKLYN, N. Y. HASTINGS, MICH. SALEM, OHIO

Sales Offices: DETROIT CLEVELAND CHICAGO ROCHESTER PHILADELPHIA DAYTON NEW HAVEN BOSTON

Foreign Factories and Offices: LONDON, Eng. TURIN, Italy PARIS, France

BLISS

No. 579

and a movement toward an increase in pig iron is a likely feature.

In the Middlesbrough district conditions alter little though there is a slight movement for the better. Exports of iron tend to increase. The restricted production is insufficient for current requirements and withdrawals from stock have been necessary in the last few weeks. The demand for east coast hematite is expanding and South Wales and Midland consumers have been in the market to cover their needs.

Manufactured iron and steel trades on the northeast coast show a little improvement and a few more orders have come in for steel plates. Structural steel has some substantial contracts for engineers locally and also in the south of England.

Among orders for rolling stock recently placed with Birmingham firms is one for 38 new Pullman cars placed with the Metropolitan-Cammel Carriage Wagon & Finance Co. by the Southern railway in connection with its electrification scheme on the lines between London and the South coast. The same Birmingham company has also been awarded 60 all-steel freight cars each of 40 tons capacity to the order of the Chinese government purchasing committee.

France Finds Competition Reducing Its Steel Market

Paris—While the position of the French iron and steel market has slightly improved with respect to export business, the domestic situation tends to become worse and unemployment in iron and steel works is increasing. The main hopes of producers are fixed on government plans to put into operation a scheme of national equipment and the meeting of parliament at which this question will be discussed is awaited with considerable interest.

The attempts to further protect the coal market by putting restrictions on foreign imports, while it would improve the position of the collieries, would go against the interests of industrial consumers, since it would mean the maintenance of the present level of prices.

In pig iron, serious competition has been experienced from Holland and the Saar. While the official price of foundry pig iron in France is 265 francs ($10.40), in view of this competition some orders have been taken at 250 francs ($9.70). There are wide fluctuations in the price of hematite pig iron, which in some cases is quoted at 365 francs ($14.30.) Since freedom has been re-established in semi-finished steel, prices have fallen off rapidly, and whereas billets were sold at 380 francs ($14.90) at the beginning of the month, they are now offered as low as 340 francs ($13.35). Blooms, 130-millimeter, have been sold at 320 francs ($12.60), and sheet bars at 360 francs ($14.15).

Prices fixed by the structural steel syndicate seem to be adhered to, but it is to be remembered that the syndicate controls only 20 per cent of the sales, the remainder being effected by warehouses controlled by producers. Furthermore, the Belgians are also offering semifinished steel in France, and there are a number of outside works, such as Pompey and Societe Metallurgique de Normandie, which quote lower prices than those fixed by the comptoir. The Belgians are invading the North African market of France in Algeria and Tunis.

The merchant bar comptoir has maintained its price at 500 francs ($19.60), which is generally adhered to, but the Belgians are underquoting. It has been reported that a few French works are also offering concessions, but these reports are difficult to confirm. Notwithstanding the lower prices fixed by the plate and sheet syndicate, the Belgians have succeeded in obtaining business in France. Hoops and bands are offered by the Belgian concerns of La Chiers and La Providence at 540 francs ($21.20) basis. Open-hearth hoops and bands are offered at low prices by the Saar concern of Roechling.

European Iron and Steel Output, Imports, Exports

PRODUCTION

Pig Iron

	Belgium	France	Germany	Great Britain
July	288,900	680,000	569,201	317,000
Aug.	299,080	682,000	499,098	275,700
Sept.	.....	654,000	438,154	248,200
Oct.	.....	.....	.....	284,200

Steel Ingots and Castings

July	284,130	650,000	803,261	428,700
Aug.	289,850	645,000	688,972	357,300
Sept.	.....	656,000	593,320	400,500
Oct.	.....	.....	.....	457,400

IMPORTS

Pig Iron and Ferroalloys

	Belgium	France	Germany	Great Britain
July	24,621	6,000	10,571	20,979
Aug.	33,377	6,000	10,729	25,209
Sept.	.....	5,000	9,599	15,882
Oct.	.....	.....	.....	30,573

Other Iron and Steel

July	35,100	18,000	72,983	210,038
Aug.	36,250	19,000	64,298	176,711
Sept.	.....	22,000	54,737	204,403
Oct.	.....	.....	.....	245,122

EXPORTS

Pig Iron and Ferroalloys

July	5,664	39,000	22,652	19,408
Aug.	4,932	42,000	12,242	12,173
Sept.	.....	28,000	15,300	12,823
Oct.	.....	.....	.....	14,272

Other Iron and Steel

July	336,800	242,100	290,474	148,929
Aug.	298,500	273,200	307,279	131,947
Sept.	.....	256,300	386,373	126,352
Oct.	.....	.....	.....	144,540

German Steelmakers Find October Poorest Month

Berlin—The German iron and steel market has continued slack, and activity of steel mills has further declined. It is reported that October was practically the worst for many years, as is reflected in the fact that only 35 per cent of total deliveries of merchant bars were for domestic shipments and 65 per cent foreign sales, these percentages being almost the reverse of normal times. Domestic shipments of A-products and merchant bars declined from 129,400 metric tons in August to 115,911 tons in September, whereas foreign shipments increased from 170,250 tons to 185,695 tons.

The Russian orders for 50,000 metric tons of material were executed in September, but, fortunately, the works succeeded in booking additional tonnages of rails for Russia, in addition to 65,000 metric tons of rails for the German railroads. The success of the domestic railroad loan of 214,000,000 marks will permit financing of further orders. An order for 100 locomotives, worth 15,800,000 marks, is to be executed during the coming year.

Export sales continue unsatisfactory. British competition in world markets is very severe; nevertheless, German producers are still effecting sales of semifinished products to British consumers. Due to this fact, foreign shipments of semifinished products advanced from 29,000 metric tons in August to 46,658 tons in September, exports of material for permanent way at the same time having increased from 9150 tons to 36,373 tons. The price of merchant bars is now about £3 2s (gold $15) and even lower, while structural shapes are about £3 ($14.50), the situation of the market for the latter product being especially unfavorable.

Operating Rate Low

Sales of bands have suffered as a result of foreign compeition, which is also increasing at home, and the number of holiday shifts is growing. Manufacturers of plates and medium-sized sheets complain seriously of their unsatisfactory position, plates being quoted at about £3 12s ($17.40) and medium-sized sheets at £3 18s ($10,00). Pipe-makers are working at only about 25 per cent of capacity and it is planned to lay idle several large plants, among them the big pipe mills of the August Thyssen works. A slight improvement is reported in thin sheets, mills being occupied at more than 60 per cent of capacity, but the cheaper offers by outsiders are pressing on the market. The quotation for ½-milimeter sheets is about £7 12s ($36.80).

Still going after six years

"CARBOFRAX"

REG. U. S. PAT. OFF.

BRICK AND CEMENT

in Car Type Annealing Furnace

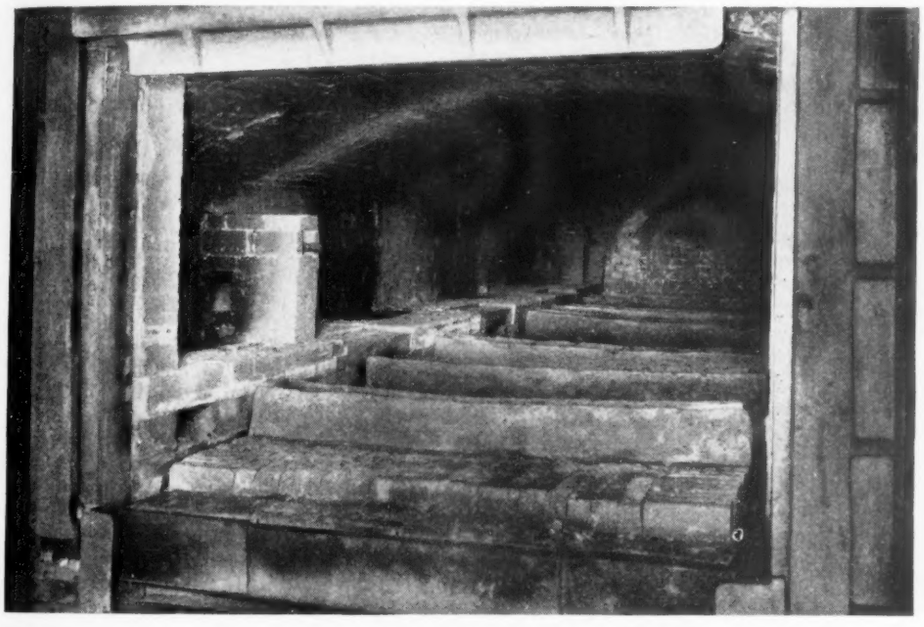
IN the plant of A. Finkl & Sons Company, Chicago, famed producers of steel die forgings, they built combustion chambers of "Carbofrax" Brick laid up with "Carbofrax" Cement. This was six years ago.

As the closeup illustration of the furnace interior shows this construction seems good for several years more.

The furnace is used for the heat treatment, up to 1800° F., of special alloy steel forgings.

Again here is definite proof of the high refractoriness, the long life, the ability to improve annealing furnace conditions of "Carbofrax"—The Carborundum Brand Silicon Carbide Refractory.

There has been no softening, sagging or spalling of the brick—no appreciable deterioration of the highly refractory cement.



YOU will find our engineering department of valuable aid in any installation calling for high temperature refractories. We invite discussion of your problems.

THE CARBORUNDUM COMPANY

REG. U. S. PAT. OFF.

PERTH AMBOY, N. J.

CHRISTY FIREBRICK COMPANY, ST. LOUIS, KANSAS CITY, NEW ORLEANS, HOUSTON

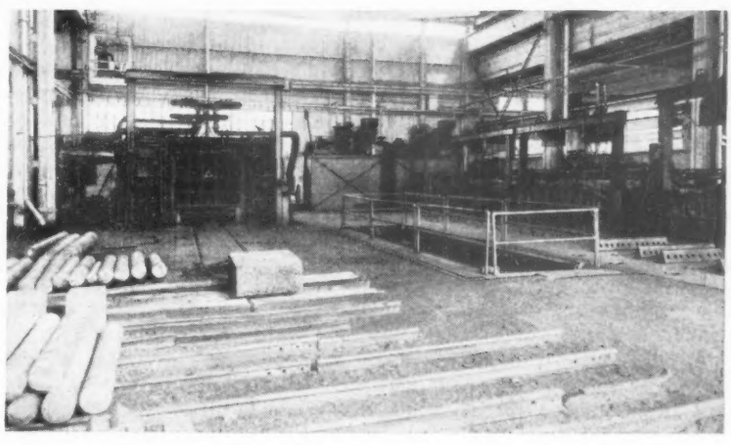
PACIFIC ABRASIVE SUPPLY CO., LOS ANGELES, SAN FRANCISCO, SEATTLE

WILLIAMS & WILSON, LTD., MONTREAL-TORONTO, CANADA

HARRISON & COMPANY, SALT LAKE CITY, UTAH

DENVER FIRECLAY COMPANY, EL PASO, TEXAS

(CARBORUNDUM AND CARBOFRAX ARE REGISTERED TRADE MARKS OF THE CARBORUNDUM COMPANY)



Machinery

PREPARATIONS for production of new models of automobiles continue to bring out machine tool orders, some of attractive size. Government departments also are buying a fair amount of equipment. Otherwise, the market is dull and has every indication of remaining so until after the first of the year. Recent news from Russia by no means is conducive to hope for renewed buying of American machine tools there. No encouragement is being given to the machine tool industry to extend the long-term credits desired by Soviet interests. Spotty revival in production of trucks and road machinery holds machine tool possibilities.

New York—Machine tool buying and inquiry are light, the market apparently having settled down to a condition of dullness for the remainder of this year. Sales and inquiry are limited to scattering ones covering one or two tools in each case. With few exceptions volume in November showed little improvement over the previous month.

General Electric is reported to have placed a vertical boring mill. A few more tools for the new subway shops have been purchased by the holder of the blanket contract for this equipment. Government inquiry is fair, including three radial drills for Puget Sound navy yard. Navy department also has bids on several engine lathes for installation at Philadelphia and at New York.

Bids go in Dec. 15 on three radial drills for Brooklyn and on four engine lathes for New York harbor or San Francisco. Waterbury Farrel Foundry & Machine Co. was the successful bidder on two trim and canneluring machines for the arsenal at Frankford, Pa.

Worcester, Mass.—Aside from an order from Ford of Canada, business in grinders is showing little activity in Worcester. Some inquiry is pending, however, from makers of automobile parts and there is some likelihood that this may develop.

Since the booking of one lathe for a French company and two for school shops in the United States, the lathe market has shown no activity. Little is looked for in the next several weeks, the closing months of this year generally being regarded, under present conditions, as being interesting only as a period during which plans for next year may be laid.

Morgan Construction Co., which has done hardly more than maintain its plant since early summer, denies reports, current this week, that it has booked a large order.

Pittsburgh—Although aided by a moderate improvement in machine tool inquiry over the past 30 days the probability of getting orders still is dependent upon improvement in general business activity after Jan. 1.

A number of recent inquiries seem to have been made for the purpose of ascertaining prices. Therefore present volume of so-called pending work is not to be regarded as indicative of business in the near future unless plant operations show improvement at an early date. Volume of recent orders is unchanged and many of these orders represent equipment which is urgently needed, purchases being put off as long as possible.

Cleveland—Revival in automotive activity has come to this city within the past few days in the form of an order for more than 200 trucks for city of New York. This order, said to be one of the largest of its kind since the war, puts 3000 men back on regular working schedule at White Motor Co.

While it is not known that the White company will require any new machine tool equipment, the order undoubtedly will stimulate small tool sales. Also, machine tool men believe that certain suppliers of parts to the White company may require new equipment.

Chicago—Machine tool inquiries again have slumped off, and sales during the week just closed probably were the lightest of this year. Signs of some renewed activity appear among road building and excavating equipment manufacturers, although their immediate purchases may not be of much consequence. However, one power shovel maker has bought some hoists and other tools and several other companies have started their season's work in snow plow production and may add to their shop equipment.

Nash Motors Co. has purchased a few items for its Kenosha, Wis., plant. Northern Pacific railroad still has a radial drill open, but no prospects are near on other railroad inquiry.

Used tool sales in the last ten days have been more active. About 30 items of toolroom and production equipment of Oro-Tone Co., 1010 George street, Chicago, were sold at receivership auction Nov. 30. Western machine tool manufacturers, with the exception of one or two, are doing little.

Bids on Machine Tools Are Opened by Government

New York—Awards are announced on several machine tools for installation in various United States arsenals, bids on this equipment recently having been opened by the army ordnance department.

Information given is as follows: On a hydraulic press for Edgewater arsenal, Kemp Machinery Co., Baltimore, was the successful bidder at $1169.70, this company also being given an order for a reducing press.

The list includes a number of items for Frankford arsenal. These are: A planetary milling machine from Hall Planetary Co., Philadelphia, at $5977; a double-end automatic machine from E. E. Shipley Machinery Co., Philadelphia, at $13,030; and two bullet weighing machines from Whaley Aircraft & Engineering Co., Norfolk, Va., at $1500.

E. W. Bliss Co., Brooklyn, N. Y., has been awarded an order for a resizing press for Picatinny arsenal, on a bid of $1800.

On Nov. 24 the navy bureau opened a number of bids covering machine tools. The bureau reports that James M. Motley & Co. Inc. was low on an engine lathe for Brooklyn navy yard, at $3870. Other successful bidders on this list include: Monarch Machine Tool Co. on two engine lathes, one being for San Francisco, at $4524.05, the other for Mare Island, at $3160.83; D. Nast Machinery Co. on a power press for Philadelphia; and Lloyd & Arms Inc. on an engine lathe for Philadelphia, at $20,800.

Gets Radio City Sheets

New York—Republic Steel Corp. has been awarded the contract to furnish and deliver all varieties and sizes of sheet steel products, including wire lath and bead material, for the Rockefeller Radio City buildings. The contract includes sheet metal for ventilating and other ducts throughout the buildings, all metal lath, corner beads and base screeds.

Nonpareil Quicksilver Corp., 1112 Hoge building, Seattle, has increased its capitalization from $30,000 to $105,000.

Fewer Boilers Are Sold

(*Continued from page 21*)

feet, compared with 11,575 for 12,173,518 square feet in the comparable period of 1930.

Steel Castings Sink to New 1931 Low in October

Commercial steel castings bookings and production sank in October to a new low for 1931. Ten month operations for 1931 have engaged the industry only 26.9 per cent:

1930	Total bookings tons	Per cent of capacity	Total production tons	Per cent of capacity
Oct.	45,552	31.6	59,522	41.2
10 mo.	786,923	54.5	901,292	62.5
Nov.	48,123	33.3	44,290	30.7
Dec.	49,387	34.2	46,290	32.1
Year	884,433	51.1	991,872	57.3
1931				
Jan.	46,810	32.1	46,294	31.8
Feb.	40,320	27.7	49,548	34.0
March	48,184	33.1	56,755	39.0
April	46,039	31.6	48,282	33.2
May	39,052	26.8	43,154	29.6
June	26,136	18.0	35,018	24.1
July	32,869	22.6	31,751	21.8
Aug.	27,458	18.9	30,186	20.7
Sept.*	23,073	15.8	26,948	18.5
Oct.**	22,851	15.7	24,083	16.5
10 mo.	352,792	24.2	392,019	26.9

**Preliminary. *Revised.

Structural Orders Slump to New Bottom for 1931

September's improvement in bookings of structural shapes was short lived, as October developed a decline to the lowest point of the year, states the department of commerce. Shipments continued the slump which set in last July and also set a new low for 1931. Comparisons follow:

	Bookings		Shipments	
1930	Tonnage	Per cent capacity	Tonnage	Per cent capacity
Oct.	209,200	52.3	239,200	59.8
10 mo.	2,385,600	59.6	2,623,600	65.6
Nov.	151,200	37.8	195,200	48.8
Dec.	152,800	38.2	168,400	42.1
Year	2.689.600	56.0	2,987,200	62.2
1931				
Jan.	162,400	40.6	172,000	43.0
Feb.	158,400	39.6	166,400	41.6
Mar.	184,400	46.1	151,200	37.8
April	292,800	73.2	158,400	39.6
May	152,800	38.2	148,000	37.0
June	177,200	44.3	162,400	40.6
July	159,200	39.8	181,600	45.4
Aug.	124,400	31.1	168,800	42.2
Sept.	196,800	49.2	150,000	37.5
Oct.	110,000	27.5	145,600	36.4
10 mo.	1,718,400	43.0	1,604,400	40.1

Truck, Tractor Shipments Set October As Low

October's shipments of electrical industrial trucks and tractors declined sharply for both export and domestic destinations, according to ten leading manufacturers' report to the department of commerce. The month's total was less than half the September figures.

1930	Total	Shipment—Domestic	Export
October	93	90	3
10 mo.	1,126	1,001	125
November	45	36	9
December	51	42	9
Year	1,191	1,050	141
1931			
January	38	33	5
February	56	50	6
March	93	84	9
April	71	48	23
May	69	69	.....
June	75	50	25
July	78	63	15
August	50	37	13
September	43	39	4
October	17	16	1
10 mo.	590	489	101

Steel Barrel Output and Shipments Gain, Orders off

Production and shipments of steel barrels in October developed a moderate gain over September, but at the expense of short-range unfilled orders, which declined slightly, states the department of commerce. Comparisons follow:

1930	Production	Shipments	Unfilled orders within 30 days
Oct.	616,121	619,558	275,778
10 mo.	6,526,069	6,527,635	.....
Nov.	497,539	500,409	230,960
Dec.	412,283	406,327	188,902
Year	7,435,891	7,434,371	.....
1931			
Jan.	421,814	427,622	210,416
Feb.	450,134	449,485	231,738
March	550,583	554,332	242,626
April	591,399	600,566	253,622
May	610,788	618,801	248,138
June	552,955	549,781	239,290
July	580,565	581,450	238,258
Aug.	449,590	455,502	235,002
Sept.	451,562	452,960	205,676
Oct.	489,555	492,145	177,673
10 mo.	5,148,945	5,182,644	.....

Malleable Castings Output And Bookings Increase

Both production and bookings of malleable castings increased slightly in October, the department of commerce reports, giving October an operating ratio of 20.5 per cent, compared with 18.6 for September and making it the best month since June. Comparisons follow:

1930	Output, tons	Shipments, tons	Orders booked, tons	Per cent operated
Oct.	28,785	29,206	24,171	29.0
10 mo.	457,458	466,353	421,941	46.4
Nov.	27,114	25,974	27,451	27.8
Dec.	30,431	27,474	26,433	31.1
Yr.	515,003	519,801	475,925	43.6
1931				
Jan.	31,267	31,536	32,676	31.5
Feb.	33,587	32,663	32,566	34.4
March	35,210	36,677	34,331	35.9
April	36,076	37,693	36,086	36.3
May	31,450	36,540	28,328	32.2
July	19,943	23,511	19,400	20.1
Aug.	18,531	20,513	18,494	19.0
Sept.*	18,193	18,387	17,610	18.6
Oct.**	20,123	17,484	18,145	20.5
10 mo.	268,217	283,136	259,812	27.3

*Revised. **Preliminary.

River Shipments of Steel Maintained at Pittsburgh

October river shipments of iron and steel products in the Pittsburgh district were little changed from those of September. Combined movement for the three rivers was 76,147 tons, against 83,302 tons in September and 255,050 tons in October, 1930. As in preceding months shipments over the Ohio, which include long hauls to southern points, were better maintained than those on the Monongahela, made up partly of interplant traffic. Comparative monthly figures follow:

1930	Allegheny	Monongahela	Ohio
Oct.	11,490	105,451	138,109
10 mo.	22,425	1,016,776	1,090,859
Nov.	17,850	75,202	95,644
Dec.	3,800	46,972	50,403
Year	44,075	1,133,950	1,236,906
1931			
Jan.	50	90,405	88,089
Feb.	.....	58,847	75,264
March	.....	76,137	104,792
April	1,250	57,751	91,570
May	1,330	35,373	59,611
June	500	21,340	46,945
July	717	21,917	39,300
August	5,800	14,522	49,164
Sept.	8,525	25,508	49,269
Oct.	2,705	24,383	49,059
10 mo.	20,877	426,183	653,063

Hoist Orders Show Gain in Number and Value

New York—Members of the Electric Hoist Manufacturers' association report the number of hoists ordered during October increased 29.032 per cent as compared with the previous month. The value of such orders increased 7.942 per cent as compared with September.

Shipments were 19.794 per cent smaller in October than they were in September.

Good Gain in October Foundry Equipment Orders

At the highest level since May, October's foundry equipment orders stood at an index of 44.8, base being the monthly average over 1922-23-24 of 100. The gain now has been successive since August's low of 16.9. Seventeen members of the Foundry Equipment Manufacturers' association, Cleveland, report the following monthly order indexes:

	1931	1930	1929	1928
Jan.	65.3	160.1	180.5	132.7
Feb.	54.7	196.4	197.0	123.6
March	174.4	164.1	209.4	138.6
Apr.	57.7	122.8	172.6	107.7
May	54.1	92.7	177.7	335.6
June	40.9	102.1	177.3	149.1
July	38.7	90.6	219.3	94.8
Aug.	16.9	85.2	229.5	278.0
Sept.	31.9	91.0	216.3	170.0
Oct.	44.8	50.0	245.3	185.0
Nov.	.....	45.3	128.6	197.8
Dec	.....	59.8	208.0	166.5

Base: Average monthly shipments for 1922-23-24 taken as 100.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

EAST HAVEN, CONN.—Viking Flying Boat Co., care M. Linenthal, 250 Devonshire street, Boston, has awarded a contract for an airplane hangar, 85 x 100 feet and shop building, 25 x 100 feet.

CAMBRIDGE, MASS.—Simplex Wire & Cable Co., 66 Sidney street, has awarded a contract for a 3-story addition to its plant at 79 Sidney street, to cost $40,000.

GREENFIELD, MASS.—Manual training shops are included in plans for a junior high school, entire cost of school being estimated at $375,000.

LYNN, MASS.—North Shore Cutting Die Co., J. Hermanson manager, 398 Broad street, has completed plans for a 1-story addition to its plant. B. Porter, 209 Washington street, Boston, is architect.

New York

BROOKLYN—Bedford Can Co. has been incorporated with 10 shares common stock to manufacture metal containers, by M. J. Leboyer, 291 Broadway, New York.

BROOKLYN—All-America Auto Springs Corp. has been incorporated with $10,000 capital, by B. T. Juceam, 16 Court street, Brooklyn.

BROOKLYN—Walker Industries has been incorporated with 200 shares common stock to manufacture novelties of metal and other materials, by M. F. W. Walsh, 26 Court street, Brooklyn.

BUFFALO—Utility Brass Corp. has been incorporated with $5000 capital to operate a machine shop, by Campbell & Campbell, Buffalo.

BUFFALO—Board of managers for J. N. Adam Memorial hospital, Perrysburg, N. Y., is considering plans for a $300,000 waterworks system to bring supply from a distant lake.

NEW YORK—Geza Tauth has been incorporated with $15,000 capital to operate a machine shop, by B. Rowe, Saugerties, N. Y.

NEW YORK—Morrisania Steel Co. has been incorporated with $10,000 capital to manufacture metal products, by Pollack & Schnitzer, 522 Fifth avenue.

NEW YORK — Duplex Specialties Corp. has been incorporated with $20,000 capital to manufacture metal specialties, by M. H. Rothstein, 150 Nassau street.

NEW YORK—Premier Refrigerating System Inc. has been incorporated under a Delaware charter, with $10,000 capital and 10,000 shares common stock to manufacture ice machinery and cooling appliances, by Prentice Hall Inc. of Delaware, Wilmington, Del.

NEW YORK—Standard Auto Spring Works has been incorporated with 100 shares common stock, by Attorneys Albany Service Co., 299 Broadway, New York.

NEW YORK—C. & M. Ironcraft Art Works has been incorporated with $10,000 capital to manufacture metalwork, by E. Miller, 1954 Sixty-fifth street, Brooklyn, N. Y.

NEW YORK—Wahlin Pressed Steel Corp. has been incorporated with $10,000 capital to manufacture metal products, by L. Shepartz, 225 Broadway.

NEW YORK—Bimetallic Reinforced Terrazzo Strips Co. has been incorporated with 1000 shares common stock to manufacture metal strip, by S. V. Ryan, Albany, N. Y.

NEW YORK—Seaboard Iron Works has been incorporated with $5000 capital to manufacture metal products by A. Selig, 202 West Fortieth street.

NEW YORK—Mechanical Die & Tool Co. has been incorporated with $50,000 capital by H. F. Smaltz, 160 Remsen street.

NEW YORK—Cold Steam Corp. of America has been incorporated with $100,000 capital and 1000 shares common stock to manufacture machinery, by Moses, Nehrbas & Tyler, 20 Pine street.

NEW YORK — Superior Fireproof Door & Sash Co., 1811 Carter avenue, is having sketches made for a 2-story plant, 100 x 500 feet, at Barnard and Barbour streets, to cost $40,000. H. Ginsberg, 205 East Forty-second street, is architect.

YONKERS—Board of education is to build a high school costing $1,500,000, including a manual training department

New Jersey

ELIZABETH — Darche Oil Burner Co. has been incorporated with $125,000 capital to manufacture refrigerators and other products, by Martin Korngut, Elizabeth.

NEWARK—Central Metal Mfg. Co. has been incorporated with 3000 shares common stock by Solomon Golatzky, Newark.

ORANGE—Universal Machine Co. has been incorporated with 200 shares common stock to manufacture heat regulators, by W. J. McCormack, Orange, N. J.

Pennsylvania

JOHNSTOWN—Blacktop Equipment Corp. has been incorporated with $5000 capital and 1000 shares no par value to manufacture highway construction machinery and equipment, by H. V. Brown, Johnstown.

PITTSBURGH—United States engineers office, Pittsburgh, will receive bids until Dec. 21 for construction of dam No. 4, Monongahela river.

PITTSBURGH—Saftee-Drive Appliance Co. has been incorporated under a Delaware charter, with $100,000 capital, by Capital Trust Co., Wilmington, Del.

PITTSBURGH—Greenwood Commercial Refrigeration Co. has been incorporated with $10,000 capital to manufacture ice-making and refrigerating machinery and equipment by F. X. Holland, 230 Edward avenue, Mt. Lebanon, Pa.

WEST PITTSTON—Non-Skid Markwick Chains Inc. has been incorporated with $10,000 capital and 1000 shares no par value to manufacture non-skid chains and links, by Mabel DeFrehn Martin, R.F.D. No. 2, Falls, Pa.

Ohio

PIQUA—Bonds for $810,000 have been voted to provide funds for an electric light and power plant. Burns & McDonnell Engineering Co., 400 Interstate building, Kansas City, Mo., is engineer.

Michigan

BATTLE CREEK—W. K. Kellogg Co. is having plans drawn by Albert Kahn, Detroit, for a power plant, construction planned for spring.

BENTON HARBOR—Michigan Platers & Polishers Supply Co. Inc., 512 Territorial road, has been incorporated with $3000 capital to manufacture supplies for plating and polishing processes, by J. D. Morris, 149 Seeley street, and associates.

DETROIT—American Blower Corp., 6000 Russell street, is having plans made for a 1-story fan plant on Tireman street.

DETROIT—Standard Trailer Corp. has been incorporated with a Delaware charter, with $100,000 capital and 2500 shares common stock, to manufacture automotive trailers, by Colonial Charter Co., Wilmington, Del.

DETROIT—Jeannin Steel Wool Corp. has been incorporated under a Delaware charter, with $100,000 capital and 1000 shares common stock, to manufacture steel wool machines, by Colonial Charter Co., Wilmington, Del.

DETROIT—Patent Developers Inc., 2341 Walcott avenue, Ferndale, has been incorporated with 1200 shares no par common stock to operate a manufac-

turing business, by Ray Thornton, 1776 York boulevard, Dearborn, Mich., and associates.

DETROIT — Simpson Speed Unit Corp., 4210 Woodward avenue, has been incorporated with $50,000 capital to manufacture speed units, power equipment and machinery, by Harold P. Brittain, 8208 Wisconsin avenue, and associates.

FLINT—Vegta-Mist Corp., 100 Old Armory building, has been incorporated with $2000 capital to manufacture vegetable sprayers, by Victor Pecha, 212 White street, and associates.

MONROE—Great Lakes Electric Control Corp. has been incorporated with 1000 shares no par value to manufacture electric devices, by Henry C. Sisung, 29 East Lorain street, and associates.

NORTH MUSKEGON—Plans are being drawn by Boulay & Harrison, Toledo, O., for a pumping station and sewerage plant to cost about $60,000. A bond issue will be voted on in the spring.

Indiana

SHELBYVILLE—Frank J. Rembusch will rebuild his burned plant. Product is screens and metal novelties.

TERRE HAUTE—Terre Haute Malleable & Mfg. Co. plans to install motors and other power equipment in its burned plant.

WARSAW—City council is having plans prepared for an electric light and power plant to cost $250,000.

Illinois

CHICAGO—Standard Oil Co. of Indiana has approved plans for expansion of its refining plant at Whiting, Ind., to cost $8,000,000.

CHICAGO—Auto Parts & Gear Co., 2559 Milwaukee avenue, will build a 1-story addition to its plant, to cost $27,000. L. S. Stern, 185 North Wabash avenue, is architect.

CHICAGO—Metal Package Corp., 110 East Forty-second street, plans to spend $150,000 on alterations to its can-making plant.

CHICAGO — Ideal Steel Products Corp., 308 North Michigan avenue, has been incorporated with $25,000 capital, by Fred B. Shearer, 203 Old Second National Bank building, Aurora, Ill.

CHICAGO—Curtis Piston Ring Co., 2407 North Crawford avenue, has been incorporated with $15,000 capital to manufacture piston rings and similar products, by Laurence M. Fine, 10 North Clark street, Chicago, and associates.

CHICAGO—Schmidt Bros. Construction Co., 22 East Huron street, Chicago, is awarding contracts for well drilling and pump equipment for three lock control houses at Lockport, Marseilles and Starved Rock, Ill.

CHICAGO—Miracle Burner Corp., 33 South Clark street, has been incorporated with 200 shares no par value to manufacture oil burners, by Harry C. Alberts, First National Bank building.

GRANITE CITY—Granite City Castings Co. has been organized by G. O. Ekstedt, Granite City, to manufacture ferrous and nonferrous castings, a plant having been leased at Sixteenth and Delmar streets.

WILMETTE—An election will be held soon on the issue of $4,000,000 in bonds for a water supply, including an intake pumping station, 6,000,000 gallons per day filter and other equipment. Pearse, Greely & Hansen, Tower building, Chicago, are engineers.

Southern States

CORNELIA, ALA.—City council plans pumping machinery and auxiliary equipment with capacity of 500,000 gallons per day in the new municipal waterworks plant, at cost of $75,000. Robert & Co. Inc., Bona Allen building, Atlanta, Ga., is engineer.

HUNTSVILLE, ALA.—Indian State Oil Co. of Oklahoma Inc., Oklahoma City, Okla., John W. Sappington president, plans to install electric power equipment in its proposed oil refining plant here, at a cost of $100,000.

DOVER, DEL.—Beyer Research Laboratories Inc. has been incorporated with 2500 shares of common stock to do research work in electricity, metallurgy, chemistry, physics and biology, by United States Corp. Co., Dover.

WILMINGTON, DEL.—Quaker Mfg. Co. has been incorporated with 6125 shares common stock to manufacture heating and ventilating devices, by Corporation Trust Co., Wilmington.

WASHINGTON—Bids will be opened Dec. 15 by the bureau of supplies and accounts, navy department, on various supplies for navy yards and naval vessels, as follows: Schedule 6960, 10 main motor air coolers for inboard and outboard motors, with spare tubes; schedule 6974, six air ejectors with after condensers, and spare parts; schedule 6984, for 89 electric portable drills; schedule 6981, for 420 lubricating pressure, medium size guns, 5 to 8 ounces, 35 of 9 to 12 ounces; schedule 6978, one electric heating furnace, box type, for heat treating, charging space not less than 33 x 80 x 20 inches.

ALEXANDRIA, LA. — Alexandria Metal Culvert Co., recently incorporated, will build a plant for manufacture of highway culverts. M. B. Evans, 530 Jackson street, is president.

MONROE, LA.—N. C. Stanford will erect ice plants at Monroe and West Monroe, requiring compressing and pumping equipment for 75,000 and 50,000 tons respectively.

BALTIMORE—Baltimore Tube Co., 1301 Wicomico street, will build a 1-story addition, 110 x 250 feet, for the manufacture of seamless copper and brass tubing, at a cost of $75,000.

COLUMBUS, MISS.—City is planning construction of an electric light plant to cost $150,000. Burns & McDonnell Engineering Co., 400 Interstate building, Kansas City, Mo., is engineer.

NORFOLK, VA.—Hampton Roads Shipbuilding Corp., Bankers Trust building, Norfolk, plans to install electric motors and electric power machinery in rebuilding part of its plant, at a cost of $80,000.

Missouri

LEES SUMMITT—An election will be held in January on proposal to issue $50,000 in bonds for a municpal electric light and power plant. W. B. Rollins & Co., 339 Railway Exchange building, Kansas City, Mo., are engineers.

ST. LOUIS—Kinloch Brass Casting Co., 2356 Palm street, is taking bids for a 1-story foundry, 59 x 70 feet, to cost $24,000. William F. McMahon, Buder building, is architect.

ST. LOUIS—Virginia-Carolina Chemical Co., Charles G. Wilson president, manufacturer of fertilizers, acids, chemicals has awarded general contract to Austin Co., Cleveland, for plant on site in St. Clair county, Illinois, opposite St. Louis plant and equipment will cost $150,000.

Arkansas

FOREST CITY—Philip Hickey, owner of a cottonseed oil mill, has let contract to Muskogee Iron Works, Muskogee, Okla., for a concrete and steel addition, 90 x 100 feet, to his plant. Conveying and elevating equipment will be required.

Oklahoma

SHAWNEE—Plans are being made by W. F. Flood, city engineer, for a waterworks system to cost $200,000, including a pumping station, softening plant and distribution system. Bids probably will be asked within 90 days.

TULSA—Gladewater Oil & Refining Co., care Thomas Green, 539 South Gary place, has been incorporated to build a refinery at Gladewater, Tex., in the East Texas field. Construction plans are delayed until after Jan. 1 and a plant not now operating may be leased. (Noted Nov. 30.)

Texas

AUSTIN—University of Texas has plans for an engineering building to cost over $250,000.

DALHART—Dalhart Farm Machinery Co. has been incorporated by R. L. Saunders.

DALLAS — National Air Transport Inc. has given a contract to Austin Bros., 1815 Coombs street, for a steel hangar and terminal building at Love field, 120 x 140 feet.

SAN ANTONIO—Alamo Natural Gas Co. has been incorporated with 30,000 shares no par value to operate a gas distribution system, by Lester S. Whip-

pie, attorney, Alamo National Bank building.

Wisconsin

WICHITA FALLS—General Machine & Supply Co. has been incorporated by R. D. Noland, 2301 Princeton street.

Minnesota

MINNEAPOLIS—Minneapolis-Honeywell Regulator Co., H. W. Sweatt, manager, will build a 1-story addition to its plant 70 x 120 feet.

Pacific Coast

LOS ANGELES—City school district, 1151 South Broadway, will build a 1-story vocational shop 70 x 140 feet, to cost $100,000. Edwin Bergstrom, Citizens National Bank building, is architect.

SAN GABRIEL, CALIF. — Eastern Airplane Mfg. Co. is having plans made for a group of buildings for an airplane factory here. National Airport Engineering Co., 775 East Washington street, Los Angeles, is engineer.

YUBA CITY, CALIF.—Bids will be taken in March for two 120-foot steel and two 40-foot spans probably concrete and double-leaf bascule bridge, to cost probably $190,000. E. Von Geldern, Yuba City, is engineer.

PORTLAND, OREG.—Bids will be opened Dec. 23 by C. E. Laurgaard, city engineer, for construction of a municipal incinerator.

SEATTLE—Fractional Retort Inc., 1317 Alaska building, has been incorporated with $50,000 capital to operate in mineral ores, purifying, oxidizing and separating, by T. S. Witherspoon and associates.

Dominion of Canada

VANCOUVER, B. C. — Dominion Bridge Co., Boundary road, will build an addition to its plant, to cost $16,000.

KITCHENER, ONT. — Construction of a power plant is included in plans for the $100,000 building program at Freeport Sanitarium near here by the Waterloo County Health association, Kitchener.

OTTAWA, ONT. — Ottawa Hydro Electric commission, 75 Laurier avenue, will receive bids until Dec. 18 for a 30-ton crane and a 3-ton hand-operated crane.

PORT CARLING, ONT.—Port Carling Boat Works will rebuild burned plant and install new machinery and tools.

TORONTO, ONT.—Hoffman Machinery Ltd. is inquiring for a 40-inch gap lathe and other equipment for machine shop.

TORONTO, ONT.—Max Ensig Ltd. has been incorporated with $40,000 capital to conduct a manufacturing, plumbing and heating business.

TORONTO, ONT.—Wilson Illumination Co. Ltd. will shortly begin the manufacture of products of the Pittsburgh Reflector Co., using Canadian materials as far as possible.

New Trade Publications

VALVES—A new reference book on valves has been issued by the Homestead Valve Mfg. Co., Coraopolis, Pa.

CEMENT—Charles Taylor Sons Co., Cincinnati, has issued a booklet describing a new high-temperature cement it is putting on the market. It is air-setting and is designed for efficient use in metallurgical furnaces.

METAL FINISHES—A leaflet by the Metal Refinishing Products Co., 3019 East Sixty-first street, Cleveland, gives instruction as to the care of various metal finishes to maintain their condition.

FURNACES—Technical information on physical factors affecting production of uniformly heat-treated products, frequently not considered in practice, is included in Bulletin No. 318 by the W. S. Rockwell Co., 50 Church street, New York.

ELECTRIC MOTOR—General Electric Co., Schenectady, N. Y., in Bulletin GEK-71 describes a motor designed for steel mill crane and auxiliary drives, built to withstand hard service. Illustrations cover the motor and its various parts.

TANKS AND TOWERS—W. E. Caldwell Co. Inc., Louisville, Ky., has issued its forty-second annual catalog of steel or wood tanks and towers for industrial and other uses. Illustrations show construction and also present a full line of accessories.

BENDING MACHINES—Wallace Supplies Mfg. Co., 1310 Diversey Parkway, Chicago, in Bulletin No. 27 describes its machines for producing bends in small or large materials for a variety of purposes. Machines are power or hand-operated and suited to every bending purpose.

ARMOR PLATE GEARS—International Nickel Co. Inc., New York, is distributing a reprint of a paper on the production of gears from 5 per cent nickel and nickel chrome carburizing steel for motor truck gears and pinions, with emphasis on heat treatment and fabrication.

TRAMRAIL—Cleveland Electric Tramrail divisioin of the Cleveland Crane & Engineering Co., Wickliffe, O., has issued a bulletin calling attention to possibilities of adapting its equipment to the careful moving of unwieldy and unusual loads in various branches of industry.

ENGINEERING ACHIEVEMENTS—Wellman Engineering Co., Cleveland, in No. 4 of its series telling of unusual achievements, calls attention to its equipment for handling low-grade copper ore at a profitable rate and of its immense seagoing crane built for the United States navy. Illustrations set forth both achievements.

HOISTS AND CONVEYORS—Wright Mfg. Co., Bridgeport, Conn., has issued a condensed catalog, No. 15, covering its entire line of hoisting and conveying equipment, with brief description, sufficient to guide the prospective buyer. It covers hand-operated chain hoists, trolleys, trolley hoists, traveling and jib cranes and electric hoists.

TRANSMISSIONS — Reeves Pulley Co., Columbus, Ind., in catalog No. 99 describes its complete line of variable speed transmissions. It shows 16 designs, describes new designs and remote controls, automatic control by electrical and mechanical means and suggestions as to various applications, with illustrations. Engineering data are included.

ALLOYS—The use of ferro carbontitanium in steelmaking is covered in a new edition of a booklet by the Titanium Alloy Mfg. Co., Niagara Falls, N. Y. It is in effect a manual of metallurgy as related to the use of titanium in various forms.

GEAR PUMPS—Schutte & Koerting Co., Philadelphia, has published a revised bulletin on gear pumps, chiefly used for handling oils. In the steel industry they are utilized for service in circulating oil in quenching tanks and for fuel and lubricating oils in power plants. The bulletin is well illustrated and tables and diagrams give complete information.

PUMPS—Worthington Pump & Machinery Corp., Harrison, N. J., has released a number of bulletins and catalogs devoted to its product, as follows: W-312-S2A, centrifugal pumps, single-stage volute; W-312-S3A, centrifugal pumps, single-stage, volute; W-312-S9, centrifugal pumps, single-stage, volute; W-218-S3A, centrifugal pumps, two stage, volute; D-112-B3, horizontal steam pumps for oil process; D-412-S5, power pumps, horizontal duplex; D-423-E10, power pumps, vertical triplex, single-acting; L-400-B1A, Multi-V-drive; D-450-B4, deep well pumps; WD-310-B3, centrifugal pumps, groups; DW-110-B1, steam pumps, self-acting, simplex and duplex; D-412-B1, power pumps, horizontal and vertical; L-621-B3, air compressors, vertical and horizontal.